

A Report of the:

June 2003

---

# Statewide Deployment Plan

---

Prepared for:



Prepared by:



Report No. 4

## TABLE OF CONTENTS

<b>1.</b>	<b>INTRODUCTION.....</b>	<b>1</b>
1.1	BACKGROUND.....	1
1.2	COORDINATION WITH UDOT STIP .....	1
1.3	STATEWIDE ITS ARCHITECTURE .....	1
1.4	APPLICATION OF THIS DOCUMENT .....	2
<b>2.</b>	<b>EXISTING ITS PROGRAM AREAS AND GROWTH AREAS.....</b>	<b>3</b>
2.1	ADVANCED TRAFFIC MANAGEMENT SYSTEMS (ATMS) .....	3
	2.1.1. <i>ATMS – Existing</i> .....	3
	2.1.2. <i>ATMS – Growth Areas</i> .....	4
2.2	ADVANCED TRAVELER INFORMATION SYSTEMS (ATIS) .....	7
	2.2.1. <i>ATIS – Existing</i> .....	7
	2.2.2. <i>ATIS – Growth Areas</i> .....	8
2.3	COMMERCIAL VEHICLE OPERATIONS (CVO).....	8
	2.3.1. <i>CVO – Existing</i> .....	8
	2.3.2. <i>CVO – Growth Areas</i> .....	9
2.4	RURAL DEPLOYMENTS.....	9
	2.4.1. <i>Rural Deployments – Existing</i> .....	9
	2.4.2. <i>Rural Deployments – Growth Areas</i> .....	10
2.5	MISCELLANEOUS ITS APPLICATIONS .....	10
	2.5.1. <i>Miscellaneous ITS Applications – Existing</i> .....	10
	2.5.2. <i>Miscellaneous Applications – Growth Areas</i> .....	11
<b>3.</b>	<b>PROPOSED ITS EXPANSION.....</b>	<b>13</b>
3.1	COMMUTERLINK TOC ITS PROJECTS .....	18
3.2	REGION 1 - ITS PROJECTS .....	22
3.3	REGION 2 ITS PROJECTS.....	26
3.4	REGION 3 ITS PROJECTS.....	29
3.5	REGION 4 ITS PROJECTS.....	32
3.6	UTAH TRANSIT AUTHORITY.....	35

## LIST OF EXHIBITS

<b>Exhibit 1: UDOT ITS Physical Architecture Diagram .....</b>	<b>2</b>
<b>Exhibit 2: Statewide UDOT Region Map .....</b>	<b>14</b>
<b>Exhibit 3: Wasatch Front ITS Projects .....</b>	<b>20</b>
<b>Exhibit 4: Region 1 ITS Projects.....</b>	<b>23</b>
<b>Exhibit 5: Ogden Urban Area ITS Projects.....</b>	<b>24</b>
<b>Exhibit 6: Regions 2 and 3 ITS Projects.....</b>	<b>27</b>
<b>Exhibit 7: Region 3 ITS Projects.....</b>	<b>30</b>
<b>Exhibit 8: Region 4 .....</b>	<b>33</b>
<b>Exhibit 9: Public Transit Map for Wasatch Front.....</b>	<b>36</b>

## LIST OF TABLES

<b>Table 1: Planning Criteria for Defining the 20-Year ITS Deployment Goals.....</b>	<b>15</b>
--	-----------

## LIST OF ACRONYMS

ADA	American with Disabilities Act
AHS	Automated Highway Systems
APTS	Advanced Public Transportation System
ATIS	Advanced Traveler Information System
ATMS	Advanced Transportation Management System
ATSC	Advanced Traffic Signal Controller
AVI	Automatic Vehicle Identification
AVL	Automatic Vehicle Location
CCTV	Closed Circuit Television
CVIEW	Commercial Vehicle Information Exchange Window
CVISN	Commercial Vehicle Information Systems and Networks
CVO	Commercial Vehicle Operations
DMS	Dynamic Message Sign
DPS	Department of Public Safety
EM	Emergency Management
ESS	Environmental Sensing Station
ETS	Event Tracking System
FHWA	Federal Highway Administration
HAR	Highway Advisory Radio
HOV	High Occupancy Vehicle
HRI	Highway-Rail Intersections
ISP	Independent Service Provider
ITS	Intelligent Transportation System
MAG	Mountainland Association of Governments
MHz	Mega-Hertz
MMU	Malfunction Management Unit
NTCIP	National Transportation Communications for ITS Protocol
POE	Port of Entry
RWIS	Road Weather Information System
SAFER	Safety and Fitness Electronic Records
STIP	Statewide Transportation Improvement Plan
TCC	Traffic Control Center
TMS	Traffic Monitoring Station
TOC	Traffic Operations Center
UDOT	Utah Department of Transportation
UTA	Utah Transit Authority
VID	Video Image Detection
VMS	Variable Message Sign
WFRC	Wasatch Front Regional Council
WIM	Weigh-in-Motion

## **1. INTRODUCTION**

This Intelligent Transportation System (ITS) Deployment Plan has been prepared in support of the Utah Department of Transportation's (UDOT) continued deployment and expansion of ITS projects throughout the State of Utah. UDOT envisions that as each project is deployed, it will be integrated with the State's Advanced Transportation Management System (ATMS), CommuterLink. This document identifies, at a high and conceptual level, desired ATMS deployments throughout the State. The purpose is to identify potential opportunities and a statewide vision so that project managers can identify opportunities and incorporate the construction of these deployments as makes sense, and in conjunction with other planned construction projects. The operating and maintenance issues involved with these deployments, such as identifying the Department's future direction, goals, funding, system obsolescence, and agency responsibilities, will be addressed in a separate ITS Strategic Plan report.

### **1.1 Background**

UDOT has a proven track record of successfully deploying innovative and multi-agency ITS projects. The State's ITS program, known as CommuterLink, serves as the transportation and emergency response backbone for the application of advanced technologies on the transportation network throughout the State. During the past three years, CommuterLink has been instrumental in using technology to address safety and congestion issues on the transportation network in and around the Salt Lake City metropolitan area.

CommuterLink was instrumental for traffic management during the 2002 Winter Olympic Games, and public awareness of this system has enhanced UDOT's exposure to the traveler. CommuterLink received a national award for the launch of the CommuterLink website, which provides real-time traffic information and was selected by the Salt Lake Olympic Operating Committee to serve as the official transportation site during the Olympics.

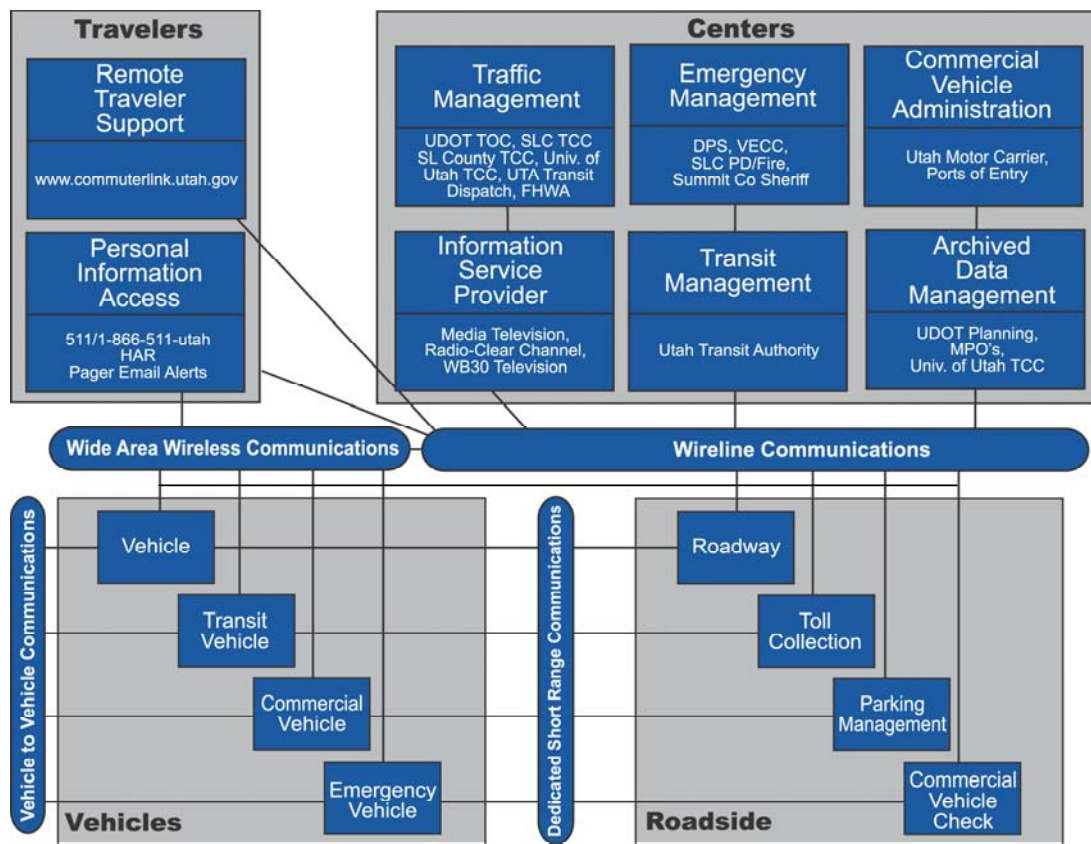
This Deployment Plan has been prepared based on initial input from the UDOT Traffic Operations Center (TOC) and 4 Regions. The proposed projects, described within this plan, were identified through several sources including interviews, review of existing project and transportation plans, and a Deployment Plan Workshop designed to solicit input from each of the Regions. The intent is to provide a general overview of planned activities and anticipated funding for the State over the next five years and link these to the Department's future ITS deployment plans.

### **1.2 Coordination with UDOT STIP**

The UDOT Statewide Transportation Improvement Program (STIP) is a five-year program of highway and transit projects for the State of Utah. The STIP is developed through a cooperative process between UDOT, Metropolitan Planning Organizations, Federal, City, and County governments. Specific ITS projects are identified in the STIP with funding and a timeline for deployment associated with each project, and therefore serve as an ideal opportunity to mainstream and incorporate ITS elements into everyday projects.

### **1.3 Statewide ITS Architecture**

UDOT has developed a Statewide ITS Architecture based on the National ITS Architecture (shown in Exhibit 1) developed by the Federal Highway Administration (FHWA). The goal of the Statewide ITS Architecture, is to provide a coordinated framework for planning and implementing ITS technologies across the State. ITS projects that will receive Federal funding will be required by FHWA to be compliant with this architecture in order to be funded.



**Exhibit 1: UDOT ITS Physical Architecture Diagram**

#### 1.4 Application of this Document

This document is intended to provide an overview of the current UDOT ITS program, identify candidate ITS deployments over the next 20 years, and establish a mechanism by which these deployments can be incorporated into the ITS program as a part of STIP projects. It is expected that UDOT project managers will review this document initially to gain an understanding of the ITS program and goals and then periodically review it as new STIP projects are developed, considered, or funded in order to identify opportunities for mainstreaming ITS technologies into the project.

While the goals and methodologies of this document will be applicable for some time, the specific ITS deployments identified will likely change shortly after publication. Therefore, to provide updated information and to facilitate project manager involvement, the UDOT ITS Division has developed a website (see Section 3) with an interactive map that shows current ITS Division and planned STIP projects. Using this map and ITS selection criteria discussed later in this document, a project manager will be able to compare their project with other identified activities (including STIP projects), identify potential ITS elements that could be incorporated as a part of the project, and then contact the ITS Division to discuss the feasibility of incorporating an ITS component within the project.

This document and the tools presented are not intended to definitively identify every desired ITS element but rather to serve as a check list, and to create an open dialogue between the ITS Division and the various STIP project managers. This tool also allows other agencies to identify opportunities to coordinate the installation of their own ITS deployments in conjunction with the State construction effort.



## **2. EXISTING ITS PROGRAM AREAS AND GROWTH AREAS**

Within the UDOT ITS Program, there are five core areas for ITS expansion:

- Advanced Traffic Management Systems (ATMS)
- Advanced Traveler Information Systems (ATIS)
- Commercial Vehicle Operations (CVO)
- Rural Deployments
- Miscellaneous ITS Applications

This section gives a brief explanation and overview of existing deployments within each ITS program area along with opportunities for expansion – termed growth areas.

A series of Deployment Plan workshops were held with members of the various UDOT Regions. The objective of the workshops was to solicit input from stakeholders on the projects proposed as part of their Region's Deployment Plan. Information related to problem areas and potential ITS applications were collected from participants at this time. These potential ITS applications are presented here as growth areas, and represent those ideas brought forward by stakeholders at the workshop. This input gives insight as to areas in which stakeholders feel there is a potential application UDOT should consider when expanding the current ITS network.

### **2.1 Advanced Traffic Management Systems (ATMS)**

#### **2.1.1. ATMS – Existing**

The UDOT Advanced Traffic Management Systems program area consists of the following six types of existing ITS deployments.

##### **Signal Coordination**

UDOT has over 600 signals online at the TOC and integrated Traffic Control Centers (TCC's). From any of these centers, engineers can monitor special / planned events or incidents, and adjust signal coordination or operating plans accordingly. Engineers are constantly evaluating traffic conditions and adjusting signal times to maximize the flow of traffic (via real-time monitoring and traffic responsive calibrations). To a great extent, these signals operate in a preprogrammed time-of-day mode.

##### **Closed Circuit Television (CCTV) Cameras**

More than 200 CCTV cameras are deployed along the State's freeway and arterial systems to provide the TOC operators and integrated agencies with a real-time look at traffic. These cameras, used only for traffic management and public safety, have resulted in a faster response time of emergency vehicles to accidents, fewer secondary accidents, and less traffic delay. By accessing the cameras online at [www.commuterlink.utah.gov](http://www.commuterlink.utah.gov), the public can check for potential traffic problems on their preferred routes before leaving home or the office, to "Know Before You Go". Each major television station in Salt Lake can also access these CCTV video feeds via two dedicated fiber optic connections.

##### **Variable Message Signs (VMS)**

UDOT has over 69 VMS deployed statewide to deliver up-to-the-minute information to motorists already on the road. These electronic signs notify motorists of problems and recommend actions in advance of final decision points. This information may be related to congestion, adverse driving conditions, or other emergencies. The information allows drivers to either re-route to their destination, or at the very least, to be informed of the problem and potential impact (i.e., expected delay time) to help relieve frustration. To maximize their effectiveness, the signs are left blank when conditions are normal, and are only used when there is a pertinent message to be disseminated.

### Traffic Monitoring Stations (TMS)

Located primarily within the Wasatch Front area, approximately 150 TMS have been deployed to collect and calculate vehicle speed, occupancy, and volume data on a lane-by-lane basis.

### Ramp Meter Stations (RMS)

Along I-15 and within the Salt Lake Valley, 17 RMS are currently operating to manage freeway mainline flows. Currently operating in a time-of-day mode, these meters control the volume of vehicles accessing the freeway at the on-ramps. UDOT is currently developing new central software and controller firmware to incorporate the TMS and RMS functionality into a single application, and will be the first site in the country to communicate using the National Transportation Communications for ITS Protocol (NTCIP). The upgrades will also add traffic responsive operation at the local ramp level.

### Road Weather Information Systems (RWIS)

RWIS deployment is continuing to be expanded on a statewide level with particular emphasis currently being given to Region 4. During the winter months, weather information displayed on the website and disseminated through the 511 system is obtained via twice-daily updates from shed foreman and TOC operators. The long-term goal is to deploy sufficient RWIS units such that these devices can replace the manual updates.

#### 2.1.2. ATMS – Growth Areas

The stakeholders identified the following growth areas within the ATMS program area.

### Traffic Management

Integration and linking of the Regional headquarters and key municipalities onto the CommuterLink ATMS communications network has been identified as a priority item for future CommuterLink expansion activities. This would include deployment of ATMS workstations to provide these Regions / agencies with access to all ITS elements within their own areas as well as across jurisdictional boundaries, and would include monitoring and control capabilities, as appropriate, of video, signs, and traffic signals. The use of data from the traffic management system was also noted as a need in expanding the UDOT's freeway management capabilities. Internally there is also a need to provide data to users in real-time (planners / engineers).

The need for additional engineering expertise and managing of traffic flows between freeway and arterial streets during an incident was expressed, as was the idea of using VMS's to advise motorists on ideal speeds to smooth traffic flows. Stakeholders felt the TOC cameras could also be used for work zone improvements.

Summary of Growth Areas for Traffic Management:

- Integration of Region headquarters with the ATMS and deployment of CommuterLink workstations
- Use of TOC data for planning
- Incident management capability
- Freeway management – traffic smoothing, work zones

### Emergency Management

UDOT's challenges in the area of emergency management, related to understanding the provider's needs and how UDOT could assist in providing traffic information to emergency management dispatch centers and responders. Stakeholders felt there was a need to let the public know about UDOT's involvement with emergency service providers to promote a better understanding of the



coordination currently in place, as well as to educate the public on safety services that are available during times of crisis.

UDOT understands the need for center-to-center information exchange in the area of emergency management. One technology area that could assist both the transportation and emergency management community is Automatic Vehicle Location (AVL) of key vehicles such as the Incident Management Trucks, or the integration of a mobile command center with Computer Aided Dispatch (CAD) and ITS technologies. Continued integration of the various (and proprietary) CAD systems used by emergency management agencies, is also deemed as a high priority to provide a Regional view of incident or other transportation related information. UDOT has received an FHWA grant for a CAD-ATMS field operational test that outlines these integration goals.

Summary of Growth Areas for Emergency Management:

- CAD-ATMS integration on a statewide level
- Deployment of AVL for emergency management
- Mobile command center integration

#### Security / Infrastructure

The Federal government is implementing a number of Homeland Security initiatives aimed at protecting critical infrastructure within the transportation system. These initiatives provide significant opportunity to enhance UDOT's ITS program, or implement new systems in conjunction with the Homeland Security program. UDOT will pursue these opportunities as it continues efforts on evacuation planning, monitoring critical infrastructure, and evaluating emergency processes and procedures.

Summary of Growth Areas for Security / Infrastructure:

- Homeland Security initiatives
- Evacuation planning, monitoring, and critical infrastructure

#### Traffic Signal Systems

Stakeholders expressed interest in several areas of traffic signal design and operation that could be addressed in the future. These areas included improved transit signal priority systems, video detection and imaging, signal coordination monitoring and management, pedestrian safety technology including use of countdown signals, advanced warning signals, and updating signal heads to LED lamps. Integration of all signal systems into a common central control system for Regional viewing and coordination was seen as a priority. By providing a direct or leased communications link to each signal or to a master location, this integration will eventually eliminate the need for stand-alone closed-loop management systems, and allow traffic engineers with access to any ATMS workstation to monitor and manage these signals remotely, providing a significant savings in operations and maintenance costs.

A goal for signal coordination is to deploy Adaptive Signal Control along major corridors to automatically measure traffic conditions and adjust signal timing in response to real-time conditions. Adaptive signal control has evolved greatly in the past few years and is becoming more mainstreamed in new signal system deployments throughout the country. Studies by the University of Utah have also shown that the use of Adaptive Signal Control is more effective on corridors that experience high volatility of traffic (i.e., near schools, diversion routes, shopping centers, etc.). Defining candidate corridors and implementing a demonstration project has been identified as a next logical step for CommuterLink.

Summary of Growth Areas for Traffic Signal Systems:

- Improved signal design and operations

- Integration of all signal systems onto a common central signal control system
- Identify corridors for potential Adaptive Signal Control deployment
- Define desired performance measures and deploy an Adaptive Signal Control demonstration project

#### Transit

Transit is an integral element of the CommuterLink system, and it is important to consider the role and impact it can play in the management of traffic, special events, and emergency evacuations. These initiatives include new transit corridors that may become significant traffic generators around transit hubs, and park and ride lots. Integration and deployment of ATMS elements and close coordination with the Utah Transit Authority (UTA) can help reduce congestion through improved traffic management and is an important CommuterLink initiative.

These closely interrelated objectives can be accomplished through bus signal priority, signal timing to allow for bus queue jumping, shared data for traveler information dissemination, and safety improvements at rail crossings.

#### Summary of Growth Areas for Transit:

- Video surveillance at traffic generator hubs and congestion points
- Expansion of the ATMS communications network to support data transfer between UTA and CommuterLink
- Signal enhancements to provide incentives to use mass transit
- Safety improvements at rail crossings (see HRI below)

#### Parking Management

Parking Management systems deal with the electronic monitoring and management of parking facilities. UDOT's interface with these systems occurs during special events to help manage arterial congestion and to promote the use of ride sharing and public transit. UTA is currently taking the lead with respect to parking management activities, but further coordination and integration with the CommuterLink System to provide users with real-time information on parking status via the CommuterLink ATIS program is needed.

#### Summary of Growth Areas for Parking Management:

- Integrate real-time parking status into CommuterLink ATIS program
- Potential need of parking assessment / plan
- Park and Ride areas
- Marketing of transit and ride sharing

#### Highway-Rail Intersections (HRI)

Highway-Rail intersections are a safety concern for UDOT. Problems include violations of gates and signals, gates in congested areas, maintenance of equipment, and trains parked on crossings. UDOT would like to improve dialog with the railroads regarding the overall objective of improving safety. One ITS technology mentioned at the workshops was video surveillance at crossings. Other options include advance indicators to notify motorists of potentially long delays well in advance of the decision point.

#### Summary of Growth Areas for Highway-Rail Intersections:

- Video surveillance
- Advanced notification of crossing delays

## **2.2 Advanced Traveler Information Systems (ATIS)**

### **2.2.1. ATIS – Existing**

The UDOT Advanced Traveler Information Systems program area consists of the following six types of existing ITS deployments.

#### **CommuterLink Website**

This interactive website ([www.commuterlink.utah.gov](http://www.commuterlink.utah.gov)) serves as a public access point to many of the ATMS devices. Incidents, construction, live snapshots of video, average freeway speeds where detectors have been installed, status and text of VMS display, and road weather conditions are currently accessible from this site. This website also serves as an educational forum and link to partner agencies and other traffic related websites. Future initiatives for this website are to keep it updated in terms of presentation, inclusion of new devices and options for viewing streaming video.

#### **511 Telephone Traveler Information System**

“511” is a nationally recognized traveler information number. Utah was one of the five early adopter states and was the first to implement a voice-activated system. By dialing 511 from any telephone (1-866-511-UTAH from outside the state), travelers can access traffic, road conditions, public transit, and Lake Powell ferry schedule information.

#### **Event Tracking System (ETS)**

UDOT has developed a map-based application to let project managers identify and track planned and current construction projects. This ETS allows TOC operators to monitor congested areas and to easily obtain important contact and scheduling information. ETS also provides other project managers and the public with a status overview to visualize active projects and their potential impacts on travel. Continued deployment of the ETS to Region and agency planning and construction departments is needed to mainstream the CommuterLink ETS program on a statewide basis. As usage grows, enhancements and program upgrades will be required.

#### **Television**

CommuterLink TV is a UDOT sponsored television station that is dedicated to the broadcast of traffic issues. Its purpose is to provide viewers with current traffic information during the morning commute hours to better plan for their commute prior to leaving for work. At the present time, Metro Networks (KUWB30) broadcasts live from the TOC from 5:30 AM to 8:00 AM weekdays. The TOC provides all of the traffic content and channel 30 provides weather content. They will also occasionally interview DOT experts to discuss transportation and ITS related topics to help educate the public. This station went on air with the beginning of the Olympics.

A second TV broadcast consists of an automated program on the Salt Lake City government access cable channel. This program runs weekdays from 7:00 AM to 9:00 AM, and from 4:00 PM to 6:00 PM. It is an automated program, which currently receives all of its data from Metro Networks, and video from the CommuterLink traffic cameras. Expansion of the CCTV feeds to other local government access channels for similar transmissions are planned.

Commercial television stations also receive much of their traffic information from the TOC, including two dedicated video feeds and the option to select and transmit on air, any of ATMS CCTV images. Currently channels 2, 4, 5, and 13 have agreements in place to receive this service. Also during peak periods, email updates on crashes, road-weather conditions, and other travel congestion concerns are sent out at least every half hour with other updates sent as conditions warrant. Channel 4 has extended their participation with UDOT even further to provide live broadcasts, nine spots each morning and two spots each afternoon, from the TOC.

### Radio

Radio broadcasts are transmitted from the TOC during weekday peak periods. Employees of the ClearChannel radio station provide live updates to each of their 17 radio stations during these periods, and Metro Networks and Airwatch Corporation provide traffic updates to many of the other local radio stations.

In addition to the commercial radio stations, TOC operators disseminate incident or event specific radio broadcasts via low powered Highway Advisory Radios (HAR). These radios operate on the AM frequency, and are used to advise motorists of incident or special event information such as status of park and ride lots, or recommended access routes. Motorists are advised to tune in via the activation of beacons on HAR frequency advisory signs. These HAR units were effectively used during the Olympics to broadcast multi-modal, special event, and congestion-related information to motorists.

### Kiosks

Traveler information kiosks provide the public with an opportunity to go on-line via the CommuterLink website to have a real-time look at traffic by viewing snapshots of camera images or by viewing the speed flow map for congestion or potential impediments (e.g., incidents, construction, or inclement weather). A kiosk has been installed in the lobby of the Calvin Rampton Complex, with additional deployments planned in the Salt Lake City Hall, and the Salt Lake County Public Works facility on State Street and 2100 South. Future growth to other areas of the State is envisioned if public use and acceptance of the kiosks warrants such expansion.

#### 2.2.2. ATIS – Growth Areas

The stakeholders identified the following growth areas within the UDOT Advanced Traveler Information Systems program area.

UDOT is pleased with the initial implementation of all areas of the CommuterLink ATIS program (Website, 511, TV, Radio, ETS). Obstacles such as public awareness and level of detailed information provided are areas that need to be addressed to ensure the future success of these traveler information systems. The current process for on demand information revolves around calling the 511 number, receiving alerts, and going to the website for information. Enhancements to the current system could be in the area of evacuation and security information. Stakeholders would like to migrate traveler information towards data dictionaries for conformity on a national basis.

Summary of Growth Areas for ATIS:

- Increase public awareness
- Optimize level of detail and gear this information to the users location (i.e., provide information on congestion in the national parks if the 511 call originates in southern Utah)
- Increase deployments of the field infrastructure (i.e., HAR, ETS deployments, etc.)
- Enhancement to include evacuation and security information
- Migrating towards data dictionaries and other standards

### **2.3 Commercial Vehicle Operations (CVO)**

#### 2.3.1. CVO – Existing

The UDOT Commercial Vehicle Operations program area consists of the following two programs.

#### CVISN

Commercial Vehicle Information Systems and Networks (CVISN) is a national program to enable government agencies, motor carrier industries, and other parties involved in CVO safety assurance and regulation to exchange information and conduct business electronically. The goal of CVISN is to

improve safety and efficiency of CVO. Utah has completed its ITS/CVO business plan and top-level design and has an active CVISN program in place in conjunction with the FHWA Motor Carrier Utah Division Office. The State's CVISN working group is focused on implementing a Regional Commercial Vehicle Information Exchange Window (CVIEW) system, which provides carrier and vehicle safety, and credential information to fixed and mobile roadside inspection stations, state agencies, and other third party users. CVIEW will facilitate the uploading of Utah-based carriers information to the national Safety and Fitness Electronic Records (SAFER) system database. Presently, four of Utah's eight Ports of Entry are equipped with advanced Weigh-in-Motion (WIM), Automatic Vehicle Identification (AVI), and electronic screening equipment.

### ITS/CVO

ITS/CVO is the use of technology and systems to support commercial vehicle operations. Some ITS/CVO programs currently underway or being evaluated include:

- Auto-Routing System
- Overweight Detection
- WIM
- Virtual Ports of Entry
- CVO Accident Reporting and Analysis
- Freight Mobility
- Hazardous Material Incident Response
- CVO Traveler Information

#### 2.3.2. CVO – Growth Areas

The stakeholders identified the following growth areas within the UDOT Commercial Vehicle Operations program area.

#### Commercial Vehicle Initiatives

Stakeholders listed several concerns with regards to commercial trucks on the transportation network. Accidents involving commercial vehicles block more lanes for a longer time period, and additional heavy-duty equipment is often necessary to clear these incidents. Unique weather and wind conditions can be difficult in Utah, and advanced notifications to truck drivers could potentially reduce accidents and / or unexpected delays. UDOT would like more information on inter- vs. intra-state commercial vehicle travel movements. Telematics and transponder issues are areas where the CVO/DOT communications could be improved.

Summary of Growth Areas for Commercial Vehicle / Intelligent Vehicle Initiatives:

- Law Enforcement / Policy / Coordination issues associated with CVO incidents
- Additional knowledge on inter- vs. intra-state CVO movement
- Telematics issues

## **2.4 Rural Deployments**

### 2.4.1. Rural Deployments – Existing

The UDOT Rural Deployments program area consists of the following two types of existing ITS deployments.

#### Road Weather Information Systems (RWIS)

The RWIS program was started to aid maintenance crews in winter operation efforts. RWIS Environmental Sensing Stations (RWIS-ESS) are field sensors that measure and predict meteorological conditions. UDOT currently has 35 RWIS-ESS units deployed throughout the State to measure and report site-specific meteorological conditions including wind speed and direction, air

temperature, relative humidity, dew point temperature, precipitation occurrence, classification, rate, and pavement temperature road condition. These measurements are transmitted in real-time to maintenance station supervisors via microwave and dedicated communications. This information provides the maintenance foreman with another decision making tool to more efficiently manage crews for anti-icing and de-icing efforts.

#### Highway Advisory Radio (HAR)

The HAR network is a series of low power AM radio transmitters strategically deployed to provide real-time incident information via audio broadcasts. HAR messages provide more detail than can be displayed on a VMS. Motorists traveling within specific geographic Regions can tune in for the latest conditions and information. When needed, sign beacons within radio coverage areas will flash, indicating the motorist should tune to a specific frequency for important traffic information. This information is updated by the TOC to inform the traveling public about incidents that will affect their travel further along the highway. UDOT has currently deployed 4 permanent and 4 portable HAR units in the northern part of the State to deliver time-critical or incident-related information to motorists traveling in rural and urban areas.

#### 2.4.2. Rural Deployments – Growth Areas

The stakeholders identified the following growth areas within the UDOT Rural Deployments program area.

##### RWIS

RWIS designs will become more standardized, including NTCIP compliance. Concern over the reliability of RWIS information was voiced as well as issues with communications, pucks, and other instrumentation. Other areas for improved RWIS include automated treatment on bridges, fog warning systems, and improving information availability to the traveler. The use of trained meteorologists on staff could improve procedures, help field personnel interpret forecast data, coordinate with other weather staff, and assist in the design of RWIS stations.

Summary of Growth Areas for RWIS:

- Improved RWIS technology and standards
- Meteorological expertise on staff
- Automated treatment systems
- Fog warning systems

##### HAR

Improved reliability and steps to thwart vandals has been identified as a need to be addressed prior to expanding HAR in other areas. Activation of the flasher beacons is generally performed by pager service, but the commercial use of this wireless service is not generally available in many of the remote sites. In addition, mounting and ease of access to the HAR equipment has made these installations easy targets for theft of the solar panels and battery units.

Summary of Growth Areas for HAR:

- Improved reliability and communications
- Site security

## **2.5 Miscellaneous ITS Applications**

#### 2.5.1. Miscellaneous ITS Applications – Existing

Active deployment of new ITS applications is currently underway in all Regions of the State, with the largest growth occurring in Regions 1 and 3. Communication links and conduit projects are being deployed to provide a direct and dedicated ATMS link between the TOC and the Region 1 and 3



headquarters. Additional communication links are in design to integrate legacy field devices in the Ogden area to eliminate current leased operating costs, and to establish center-to-center communications between the UDOT centers and those of Orem and Provo. New CCTV, VMS, and TMS devices have been incorporated within new construction projects in Region 3, and designs are in process for other various locations including the installation of CCTV cameras at construction sites such as the Virgin River bridge reconstruction project in Region 4. Deployments have also included new VMS, CCTV, and an AVI-activated gate at Bryce Canyon National Park. A new communication design report has also recently been approved for new deployment areas to provide greater functionality and lower maintenance / operating costs. Examples of these enhanced features include the ability to monitor and configure the field communications equipment from the TOC, and the ability to connect multiple cameras and serial devices to a single cabinet switch. These capabilities, if fully implemented, will enable traffic engineers to monitor traffic signal Malfunction Management Units (MMU), upload / download controller configuration parameters, view and adjust video detection, and look at a CCTV camera image all from an ATMS workstation. These are but a few examples of enhancements that will provide immediate improvements in customer service, savings in time and resource requirements, and significant reductions in operating and maintenance expenses.

#### 2.5.2. Miscellaneous Applications – Growth Areas

The stakeholders identified the following miscellaneous growth areas within the ITS Program.

##### Communication

A strategic growth area for continued ITS expansion includes the deployment of a statewide fiber optic network along the Wasatch Front, with a dedicated wireless network elsewhere. This was a common theme among the Stakeholders and was identified as a priority item to help migrate away from current lease services and their associated monthly costs. Full-scale deployment of a dedicated ATMS communications network on a statewide basis to every ATMS device is unrealistic, especially within rural areas, yet communications to field devices, emergency management vehicles, roadside readers, and center-to-center sites is critical for the future success and integration of the ITS infrastructure and partnering with agencies on a statewide level. Therefore, the use of leased services will still be required and needs to be anticipated, especially in the short term where basic infrastructures are not fully implemented.

Summary of Growth Areas for Communications:

- Expansion of a dedicated communication network (wireline and wireless) to integrate Regional and key municipal control centers
- Conversion of legacy field devices to the new communication network to eliminate associated long distance and/or usage tariffs

##### Safety

Several areas emerged for addressing safety concerns through the use of ITS. Areas where ITS may be applied include work zone applications, pedestrian issues, crashes, and security. Cameras could be used to monitor work zone queues, as warning devices for wrong-way vehicles, or for anomalous conditions within secure areas. Image recognition technologies have advanced to the point where the presence of a human can be identified to activate alarms at a designated operations center. Applications for this use might be to deploy cameras underneath critical structures, or near secure facilities where a human presence might be cause for alarm, and worthy of inspection of the camera image.

Summary of Growth Areas for Safety:

- Security monitoring of anomalies
- Pedestrian ITS applications

- Work zone ITS applications
- Safety ITS applications

#### Research

Several items of research were identified in three primary areas: traveler information, traffic operations, and advanced technologies. Expanding 511 and enhancements to the website needs additional focus groups and research on events, construction, and weather. Traffic operations research areas include dynamic lane control and travel time estimations. Research areas involving new and advanced technologies would include weather information, the commercial vehicle industry, video detection of anomalies for security applications, and integration issues such as incorporating avalanche systems into CommuterLink.

Summary of Growth Areas for Research:

- Research needs: traveler information, traffic operations, and technology

#### Automated Highways Systems

The future of Automated Highway Systems (AHS) and its relation to UDOT exist in two arenas: the roadway and the vehicle. The AHS will allow equipment to work “smarter”. Snowplows and maintenance vehicles could be enhanced for better operation and human factors. The roadway infrastructure could provide additional information to cars equipped to interpret the signals. Initial steps for advancing the AHS are to address policy issues, legal issues, and social issues. Much work would need to occur with the auto industry. Additionally, research would need to occur on UDOT’s infrastructure.

Summary of Growth Areas for Automated Highway Systems:

- Policy and legal issues associated with the AHS

### 3. PROPOSED ITS EXPANSION

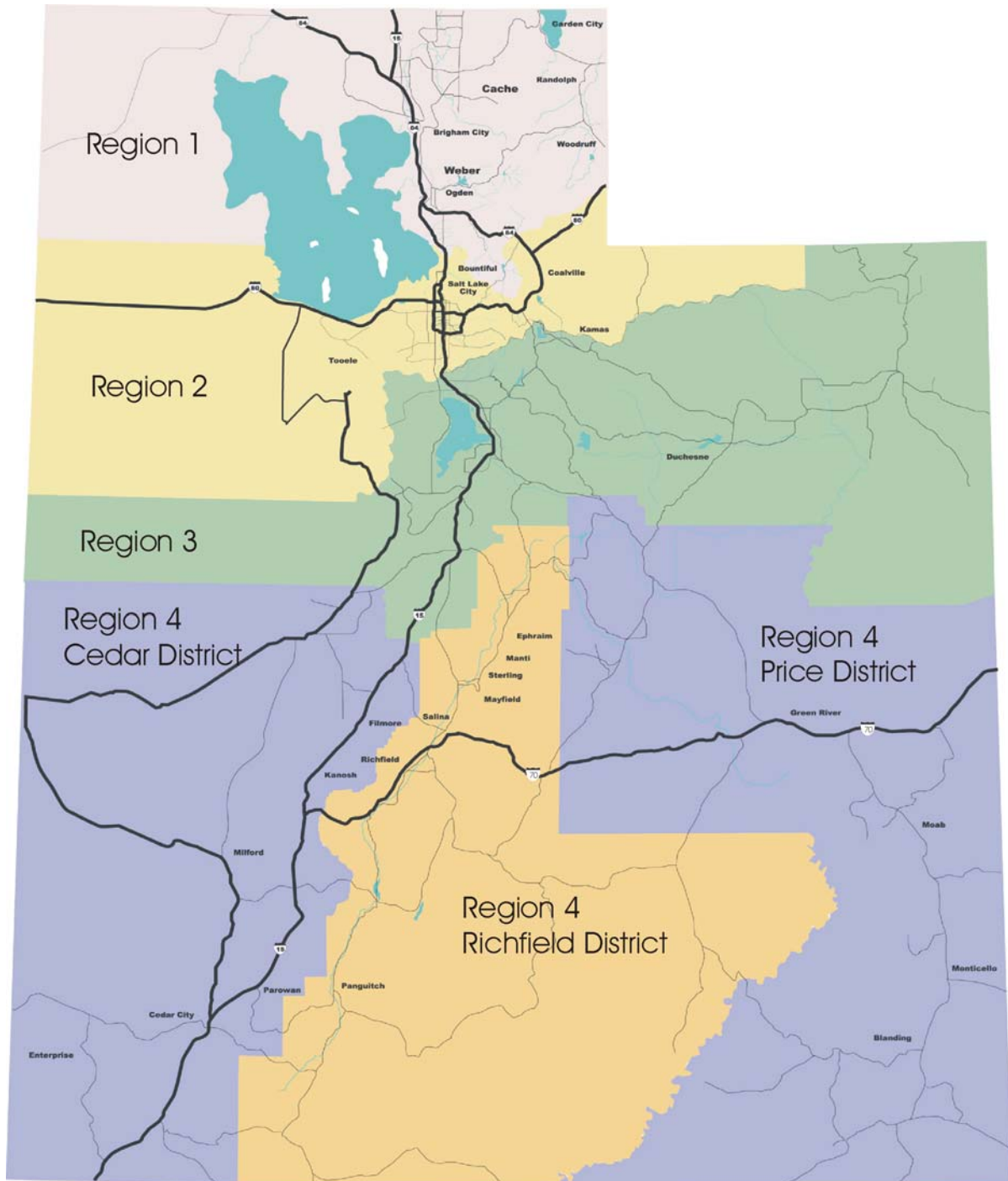
This section describes some recommended ITS deployments for UDOT over the next 20 years on a Region-by-Region basis and depicts them on a series of Regional maps. Due to the extensive nature of a 20-year list, not all potential projects are illustrated. Rather, strategic deployment goals for each Region have been identified to assist users in identifying ITS components that should be considered in conjunction with new construction projects. Additionally, STIP projects through FY07 that might be able to incorporate ATMS devices are also identified in Appendix A. It should be emphasized that not all ATMS devices identified within this Appendix matrix are expected or envisioned for inclusion within the project. Rather these associations were based on the type of construction activity and relevance to deployment of a particular device. For instance, all roadway projects involving pavement work will have conduit identified as a potential ATMS element. The purpose is not so much to say conduit will be installed on every pavement project, but rather to use this list as a project manager's checklist to say future use conduit should be considered for inclusion within this project. A review of other nearby projects (existing and future) will determine the relevancy of future needs and growth areas. The intent therefore of this checklist is to initiate a discussion between the project manager, the ITS Division, and TOC Operations to help define the advantages and reasonableness of including the identified, or other ATMS component within the early design phase of a project.

These STIP projects and associated ATMS components can also be viewed online at the following website. This site, [http://168.178.120.60/website/ATMS\\_devices/viewer.htm](http://168.178.120.60/website/ATMS_devices/viewer.htm) was developed to provide an easy forum to maintain current and up-to-date views of all existing and planned ITS deployment activities.

The recommendations are organized by the four statewide UDOT Regions as depicted in Exhibit 2 and by the TOC itself as a statewide operations center. For clarity, not all individual elements (i.e., TMS, trailblazer, or traffic signal integrations) are depicted on the Region maps since these are too numerous to identify. These deployments have instead been identified by coverage area. In addition, recommendations relevant to the Utah Transit Authority are included as a separate section at the end in order to emphasize the importance of an integrated transportation view.

Because this plan cannot reasonably identify all potential projects or predict local needs, specific planning criteria have been developed to help define the 20-year ITS deployment goals. These criteria are depicted in Table 1 and can be used to identify the ITS components that might be appropriate for a particular location based on the physical characteristics or functional needs of that location.

Many device deployments are located as a function of the VMS installations, and are depicted on the associated maps as ATMS Device Groups. These collections of inter-related devices are purposely grouped together to increase overall effectiveness and synergy of use by sharing infrastructure (e.g., cabinets, utilities, communications equipment) and increasing functionality. For example, strategically located TMS or RWIS units can automatically activate congestion or weather related messages on a nearby VMS; cameras can verify that messages are appropriate and correctly displayed; and sign messages can alert motorists to tune to HAR frequencies for special alerts. For this reason, these ATMS groups have been defined to consist of VMS, TMS, CCTV cameras, RWIS, and HAR units.



**Exhibit 2: Statewide UDOT Region Map**

**Table 1: Planning Criteria for Defining the 20-Year ITS Deployment Goals**

Device	Locating Criteria	Purpose
VMS	<ul style="list-style-type: none"> <li>At least 2 miles in advance of every freeway-to-freeway and freeway-to-major highway interchange (minimum spacing 5 miles typical)</li> <li>Arterial trailblazer signs on major urban diversion routes, and in advance of freeway access points</li> </ul>	Freeway diversions
	<ul style="list-style-type: none"> <li>All inbound freeway State border crossings</li> </ul>	Traveler advisories
	<ul style="list-style-type: none"> <li>In advance of all Ports of Entry</li> </ul>	Inspection requirements
	<ul style="list-style-type: none"> <li>Blank out signs at all: <ul style="list-style-type: none"> <li>Ramp meter on-ramps</li> <li>HAR sites</li> <li>Special event / parking areas</li> <li>Hazardous sites</li> <li>Railroad crossings</li> </ul> </li> </ul>	Activated during: <ul style="list-style-type: none"> <li>Meter "on" conditions</li> <li>Important message broadcasts</li> <li>Required routing/diversion of traffic</li> <li>Hazardous conditions such as ice, fog, etc.</li> </ul>
	<ul style="list-style-type: none"> <li>Intermodal and transit facilities / park &amp; ride lots</li> </ul>	Traffic management, traveler advisories
HAR	<ul style="list-style-type: none"> <li>All sites where at least one freeway VMS is located, but no closer than 20 miles of another HAR unit</li> </ul>	Clustered with freeway-to-freeway VMS to advise motorists of significant events. VMS can be used to advise motorists of special alert broadcasts
CCTV	<ul style="list-style-type: none"> <li>All signalized intersections where average v/c ratios exceed 1.0 during peak hours</li> </ul>	Monitor intersection operations
	<ul style="list-style-type: none"> <li>All rural freeway interchanges where arterial v/c averages exceed 0.9 during peak hour conditions and/or if arterial route is frequently used for special events. Camera to be positioned such that arterial traffic can be monitored ¼ miles in either direction</li> <li>All urbanized interchanges</li> </ul>	Monitor freeway / arterial conditions
	<ul style="list-style-type: none"> <li>All sites where VMS are located</li> </ul>	Upstream of all VMS to provide a visual confirmation of sign message displays
	<ul style="list-style-type: none"> <li>Intermodal and transit facilities park &amp; ride lots</li> </ul>	Security, traffic management

Device	Locating Criteria	Purpose
TMS	<ul style="list-style-type: none"> <li>All freeway mainline sites where ramp meters are installed</li> </ul>	Support traffic responsive metering
	<ul style="list-style-type: none"> <li>Positioned at, and ½ mile upstream and downstream of all freeway-to-freeway VMS</li> <li>All freeway interchanges where v/c ratios exceed 0.9 during peak hour conditions</li> <li>All freeway rest areas</li> </ul>	<p>To monitor traffic flow conditions and/or to automatically activate congestion messages</p> <p>To monitor usage</p>
Ramp Meter	<ul style="list-style-type: none"> <li>The preliminary warrant should consider mainline v/c, mainline speed, and/or accident rate</li> </ul>	Help maintain freeway flows at or below capacity levels
	<ul style="list-style-type: none"> <li>Further analysis should be done if one of the following is true: <ul style="list-style-type: none"> <li>Mainline v/c &gt; 0.8 for 2 lane hwy (for more than ½ an hour)</li> <li>Mainline v/c &gt; 0.85 for 3 or more lanes (for more than ½ an hour)</li> <li>Mainline Speed &lt; 50 mph (for more than ½ an hour)</li> <li>Accident Rate (in merge or weaving section) &gt; 10 mvm</li> </ul> </li> </ul>	<p>If one of the criteria is met, then further analysis should determine the cause of the problem and if ramp metering is a feasible solution</p>
	<ul style="list-style-type: none"> <li>Upstream on-ramps located within two miles or less of a metered site should also be metered</li> </ul>	<p>Technical reasons for ramp metering include (but are not limited to):</p> <ul style="list-style-type: none"> <li>Break up entering platoon in a merge or weave section. This can possibly increase the bottleneck capacity (Cassidy) or reduce the number of accidents within the section</li> <li>Relocate queue from freeway to on-ramps with the goal of reducing delay to motorists exiting before the bottleneck</li> <li>Metering of nearby and adjacent upstream on-ramp(s) minimizes the concentrated use of these ingress points, which otherwise would simply cause the overcapacity bottleneck issue to migrate to a new location</li> </ul> <p>Social reasons for ramp metering include (but are not limited to):</p> <ul style="list-style-type: none"> <li>Give priority treatment with higher LOS to mass transit and carpools</li> <li>To encourage drivers to use alternate routes or to alter their schedules</li> </ul>



Device	Locating Criteria	Purpose
RWIS	<ul style="list-style-type: none"> <li>All sites where at least one freeway-to-freeway VMS or ATMS cluster is located</li> </ul>	Clustered with freeway-to-freeway VMS to support automatic posting of weather related messages
	<ul style="list-style-type: none"> <li>Minimum of one sensor every 50 miles along freeway segments that typically require snow plowing or de-icing chemicals during winter months</li> </ul>	Support management and maintenance personnel with snow removal operations and scheduling
	<ul style="list-style-type: none"> <li>All mountain summits</li> <li>Vicinity of all chain-up areas</li> </ul>	Automatically update 511 road condition message updates
Traffic Signal Systems	<ul style="list-style-type: none"> <li>Integrate all coordinated signal systems onto State's central traffic control system</li> </ul>	Provide for statewide viewing of all signal systems from any ATMS workstation
	<ul style="list-style-type: none"> <li>Traffic signals located within 0.5 miles of each other shall be interconnected</li> </ul>	Interconnect and coordinate adjacent signals
	<ul style="list-style-type: none"> <li>Transit corridors</li> </ul>	Bus pre-empts, queue jumping
Conduit / Comm.	<ul style="list-style-type: none"> <li>All State freeways</li> <li>Between access road and all DOT facilities</li> </ul>	Future use
	<ul style="list-style-type: none"> <li>Transit corridors / facilities / park &amp; ride lots</li> </ul>	ATMS device integration, data sharing
Highway and Work Zone Safety	<ul style="list-style-type: none"> <li>Warning beacons</li> <li>Portable VMS</li> <li>Portable HAR</li> <li>Portable CCTV</li> <li>ETS</li> <li>Variable speed limit signs</li> <li>Fog warning sensors</li> <li>Need for an increase in public awareness (ATIS)</li> <li>Remote monitoring of safety devices for failure</li> </ul>	<p>Remote monitoring and management of work zones through the use of ITS</p> <p>Encourage route diversions or modal shifts, public relations, etc.</p> <p>TOC control and monitoring of device will also serve to identify maintenance issues</p>

### 3.1 CommuterLink TOC ITS Projects

Located in Salt Lake City and often associated with Region 2 because of its proximity and extent of deployed elements within this Region, the TOC is actually a statewide facility and its mission is to serve and support all four UDOT Regions. Construction and initial device procurement of the TOC facility began in 1997, with most electronic and computer equipment installations occurring in early 1998. Therefore, while it seems that the CommuterLink System is new, the age of many of the electronics (e.g., the computer servers, video wall projectors, video matrix switch, and communication equipment) are actually over five years old, and based on a design that is closer to 7 years old. In electronic years, this is a very long time, and coupled with the extremely heavy usage and harsh field environment, many of these devices are at or nearing the end of their useful life. Replacement parts are beginning to become difficult to obtain, and in some cases vendors have announced the end of life to their products and will no longer support them. Future deployment plans for the TOC therefore will focus on a coordinated plan to deal with equipment obsolescence and migration to new technologies and operating procedures. Examples of current and future obsolescence (both functional and physical) that are being addressed include the conversion from the existing SONET and ATM communication architecture to IP over Ethernet, eventual elimination of the video switch, upgrade of the TOC workstations and video projectors, gradual replacement of inductive detectors to non-intrusive technologies, eventual conversion of signal controllers from NEMA TS-2 to the new Advanced Traffic Signal Controller (ATSC), implementation of Adaptive Control signal systems and corridor based ramp meter control systems, retrofitting of DMS to LED, and conversion of device protocols to NTCIP to name a few. This continual maintenance and upgrade is critical and must be an ongoing effort to avoid the need for mass replacements in the future, and to stay abreast with new technologies and standards.

TOC and the ITS Division projects are generally geared towards the enhancement and development of new software and infrastructure improvements that will benefit the entire CommuterLink community. Deployment projects envisioned over the next few years include extension of the ATMS system (as installed within Region 2) throughout the rest of the Wasatch Front (see Exhibit 3). This coverage is envisioned to consist of half mile spacing of CCTV and TMS stations along I-15 from North Ogden in the North to Spanish Fork in the South, with VMS deployments in advance of all major diversion points. To accomplish this, a dedicated communications network and local traffic control center is required to provide Regions 1 and 3 with the ability to monitor and affect the operations of field devices within their area of control, and to extend this coordination to their municipal partners as well (i.e., Orem and Provo). Integration of legacy ATMS devices will be accomplished as this backbone, and subsequent distribution communication links are established.

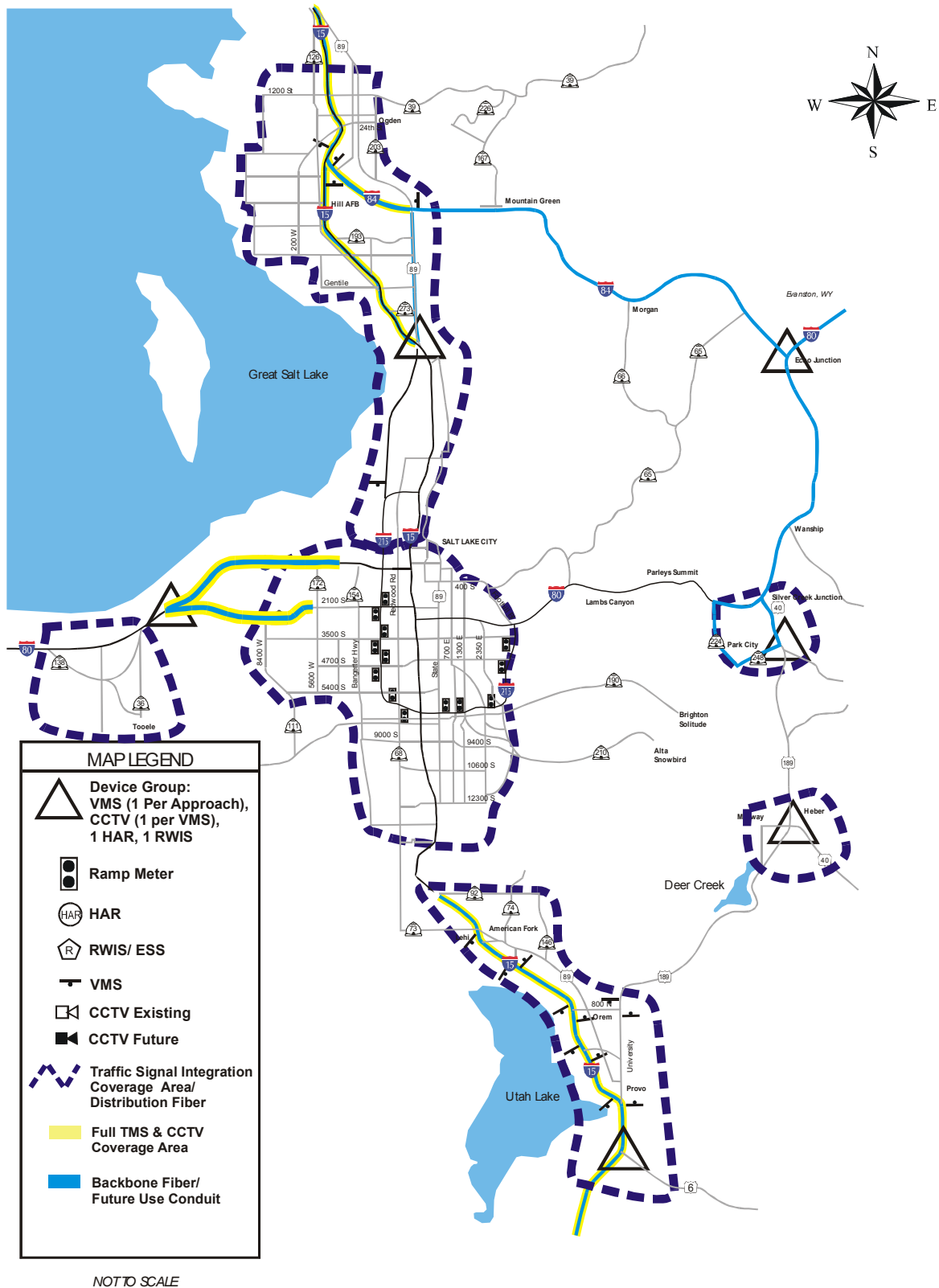
For Region 4, the TOC and ITS Division intends to extend and integrate access to the central traffic control system to allow for remote monitoring and management of signals throughout the Region, with a priority emphasis on the St. George area. Since this Region is predominantly rural, emphasis of future deployments in this area will include the collection and monitoring of weather and incident information through the expansion of remote sensors and partnerships with public safety dispatch centers. This information will then be integrated into the CommuterLink for subsequent dissemination to the public via existing ATIS systems. Software enhancements to mitigate the lack of a dedicated and high speed ATMS network will be a priority focus to ensure the same functionality and usefulness is available to this Region (i.e., remote system access via the internet or across the state WAN, and the automatic emphasis on local issues when accessing the ATIS components instead of giving the appearance of everything being focused on the Salt Lake area).

The ITS Division is also working to upgrade the communications infrastructure, hardware and software systems; develop a new NTCIP ramp metering system; producing new procurement and design standards, retrofitting existing devices (i.e., VMS, ramp meter warning signs, HAR beacons etc.) with new LED displays, and implementing new software tools and applications to further help



the TOC and Regions manage this infrastructure (i.e., deployment of GIS tools and a new ATMS asset management application to track and manage these field devices).

The ITS Division is also working with the TOC and Research departments to identify emerging technologies for future implementation. Examples of technologies that are currently being evaluated include roadside to vehicle communications, use of Telematics and vehicle probes, and automatic interfaces between road and weather sensors such as using RWIS or fog sensors to automatically generate alerts.



**Exhibit 3: Wasatch Front ITS Projects**

## SUMMARY OF 5 YEAR COMMUTERLINK TOC DEPLOYMENT GOALS

### New Agency / System Interconnects:

- Regions 1, 3, and 4
- Center-to-Center Integration with municipal traffic operations centers (i.e., Provo, Orem, St. George)
- Integration of legacy devices
- Links and ITS deployments to Bryce / Zion National Park
- Links to neighboring State traffic control centers and emergency dispatch centers
- Statewide deployment of *icons*™ at all Region headquarters and in St. George

### Hardware Enhancements:

- Upgrade existing communications equipment with new IP-based infrastructure
- Migration and retrofit plan to address obsolescence (physical and functional)
- Define standards

### Software Enhancements:

- Ramp meter system (NTCIP) and corridor management algorithms
- Video control system
- VMS control system
- Integrate with other field systems (i.e., Transit Signal Pre-empts, Opticom, Video Detection, MMU's etc.)
- Automated freeway performance measurements
- CAD-ATMS integration / Incident management control system
- Device asset management system
- GIS map deployment / integration
- AVL integration
- ATIS enhancements (ETS, Website, 511)

### Research

- Identify emerging technologies

### 3.2 Region 1 - ITS Projects

Region 1 encompasses the geographical area north of Davis County to the Idaho border. The following counties are included in this Region: Box Elder, Weber, Morgan, Rich, and Cache.

An important element in any ITS Program is the communications infrastructure, and an emphasis on the installation of a backbone communication network within the urban areas of this Region will be emphasized. Initially, a backbone connection between the TOC and Region 1 headquarters and signal shop will be completed through the installation of fiber optic cable along I-15 to Riverdale Rd. This activity will be closely followed with the integration of traffic signals located in Ogden, Roy and Layton onto the *icons*<sup>TM</sup> traffic control system, as well as various CCTV cameras that were originally installed for the Olympics. Over time, the CommuterLink fiber optic communications infrastructure on I-15 will be extended towards Farr West, and along US 89 / Washington Boulevard. This latter alignment will also serve to provide redundancy and to pick up additional devices onto the network such as the VMS.

ATMS device expansion will continue in the easterly direction along I-84, however, the fiber-based communications infrastructure may not immediately follow due to the rural nature of this area. Alternate communications methods may be required and could include wireless or leased services (i.e., wireless, DSL, or frame relay circuits) as required. There will also be expansion of the current ATMS in some of the smaller cities, tying them into the communications system. ATMS enhancements are envisioned to include integration of traffic signals in some of the smaller cities, upgrading signal controllers, and developing new signal timing plans. Project expansion will build upon the current work already performed by the Region 1 engineering staff such as Logan.

ATIS in the form of the CommuterLink website, 511, and VMS will alert travelers of road conditions, especially at the Idaho border and in Logan, Weber, and Sardine Canyons where weather plays an important factor in safe travel. HAR and RWIS deployments will complement the signs at these locations.

The 511 information available from the Ports of Entry (POE), as well as VMS installed at the Brigham City POE, should enhance the commercial vehicle operations at this location. Installation of electronic seal and license plate readers are also planned for the Perry POE.

Exhibits 4 and 5 show a graphical system illustration of the ITS deployment plans for Region 1. Appendix A lists relevant STIP projects for Region 1 that could be used to facilitate deployment of these future ITS project goals.





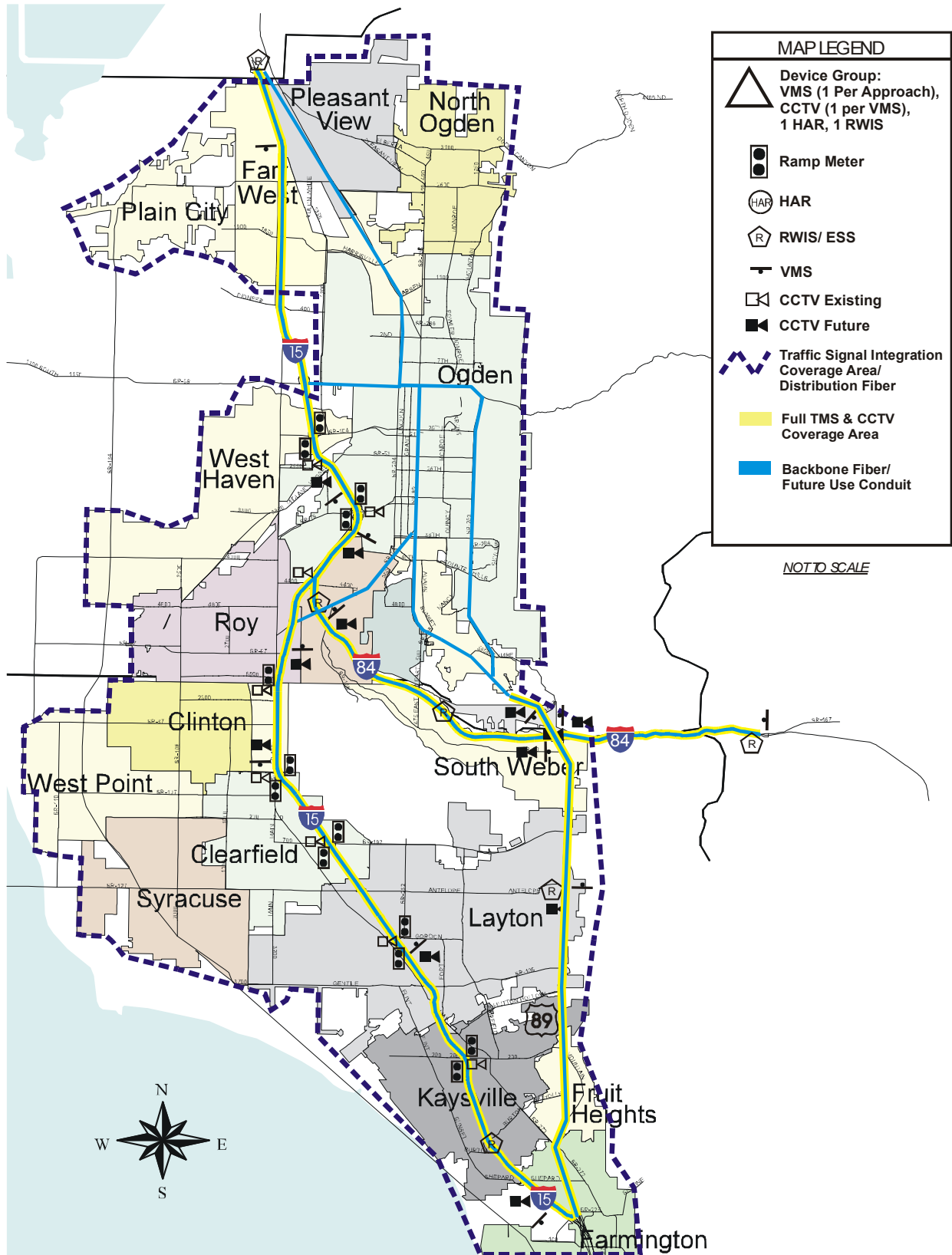


Exhibit 5: Ogden Urban Area ITS Projects

#### SUMMARY OF 5-YEAR REGION 1 DEPLOYMENT GOALS

##### New Agency / System Interconnects:

- Region 1 and TOC interconnect
- Links to local EMS dispatch centers
- Links to local municipalities in Ogden and surrounding areas
- Links to POE's
- Integrate existing *icons*<sup>TM</sup> server with TOC, and incorporate signals from municipalities onto this common platform

##### Communication Enhancements:

- Fiber interconnect along US 89 and Washington Blvd from Farmington to R1 headquarters
- Fiber interconnect along US 84 from US 89 to I-15
- Fiber interconnect along I-15 from Riverdale Rd to North Ogden

##### CommuterLink Enhancements:

- Establish local TCC facility in Region headquarters
- Integrate legacy devices and expand CCTV and TMS coverage along freeway and local arterials
- Expand RWIS and HAR coverage in rural areas

### **3.3 Region 2 ITS Projects**

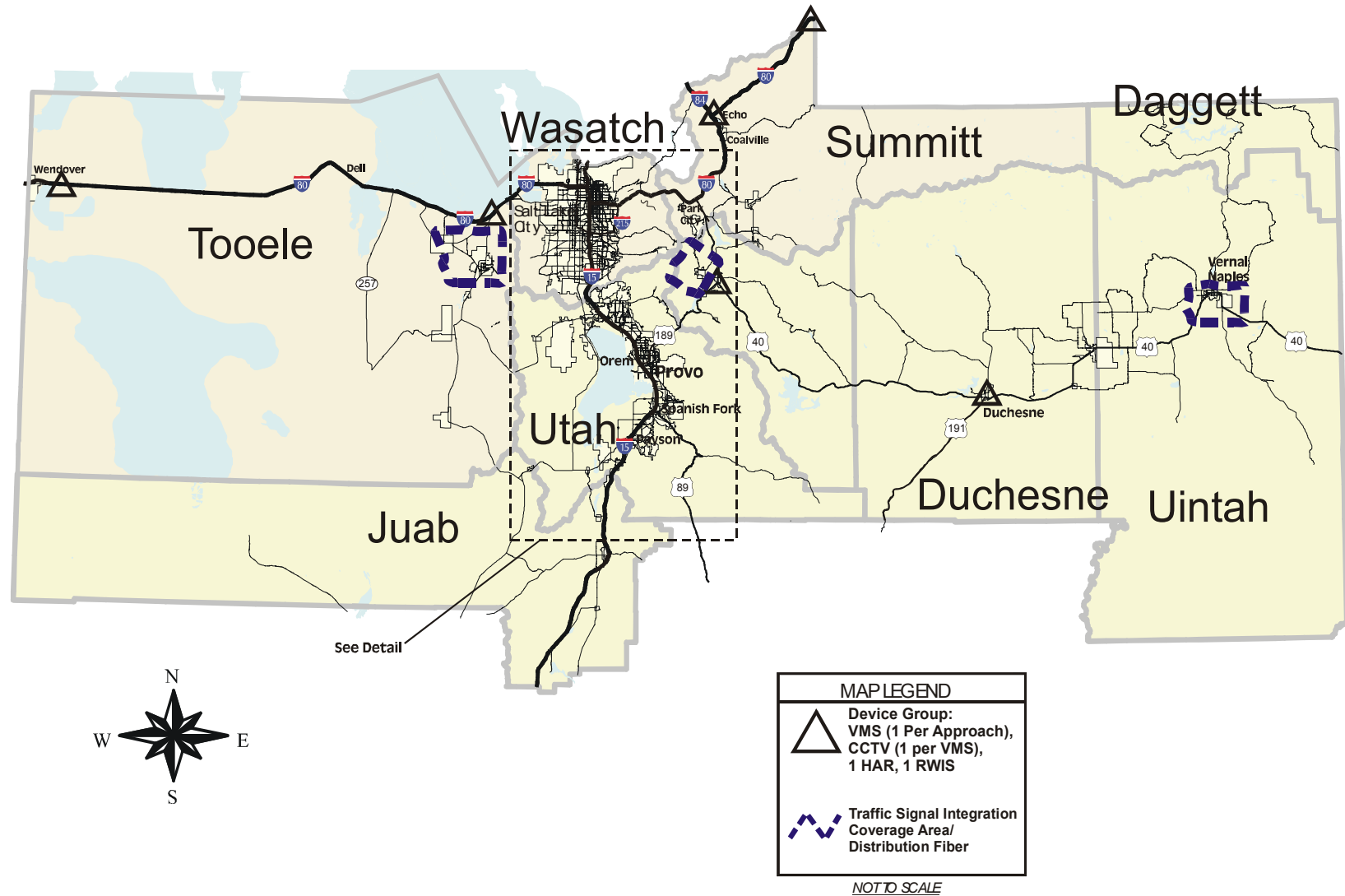
Region 2 includes Salt Lake City and serves the following counties: Tooele, Davis, Salt Lake, and Summit. Of all four UDOT Regions, Region 2 has the most developed ATMS System.

Although an ATMS network has been established in the Salt Lake Valley, much remains with respect to filling in communication gaps to new or remote signals, expanding ramp metering along I-215 and SR-201, converting spread spectrum radio connections to fiber, repairing or adding new detection and integrating video detection for remote monitoring / configuration, installing additional cameras, and completing system expansion on arterials that were of lower priority during the initial deployment (especially on the valleys west side). East and West fiber backbone deployments are needed to complete the integration of Tooele and Park City, and additional efforts are in process to coordinate with UTA for the integration of bus and light rail priority projects along major arterial routes.

This Region is also beginning to experience end of life and maintenance issues for those devices that were initially installed with the I-15 design-build project. Many of these devices are at or nearing the end of their useful life, and in some cases are no longer supported by the manufacturer. This is especially true of the communication devices. To remedy this and increase the useful life of the system as a whole, it is recommended that communications equipment in the hubs be upgraded whenever a new construction project impacts the roads or infrastructure being served by a particular Hub. Through this method, the entire system can be upgraded to the new IP architecture, which in turn will not only solve these end of life issues, but will provide the Region with a well maintained system, an increase in the level of operating features, and an overall lowering of maintenance costs.

The deployment of ITS devices in the rural areas will continue to include RWIS, VMS, CCTV, and HAR's at congested, special need locations (e.g., weather, high-accident prone), route decision making sites, and along I-80 between the Nevada and Wyoming borders. Further integration with neighboring states, the POE's, and the Motor Carrier Division for deployment / enhancement of CVISN is also considered to be a high priority.

Appendix A lists relevant STIP projects for Region 2 that could be used to facilitate deployment of these future ITS projects. Exhibit 6 illustrates the locations of these projects.



**Exhibit 6: Regions 2 and 3 ITS Projects**

SUMMARY OF 5-YEAR REGION 2 DEPLOYMENT GOALS
<p>Communication Enhancements:</p> <ul style="list-style-type: none"><li>• Phase I - Install new communication infrastructure in Hub buildings</li><li>• Phase II - Expand new communication design to field cabinets</li></ul> <p>Construction of additional ATMS devices:</p> <ul style="list-style-type: none"><li>• Fiber / Conduit expansion to Tooele and into Park City</li><li>• Expansion / retrofit of ATMS field devices (Ramps, signals, CCTV, DMS, and Detectors)</li><li>• Install / repair local detectors and integrate VID's into the system</li><li>• Interconnect remaining traffic signals within urban area</li><li>• Integrate transit priority systems</li><li>• Expand rural and CVO ITS deployments</li></ul>



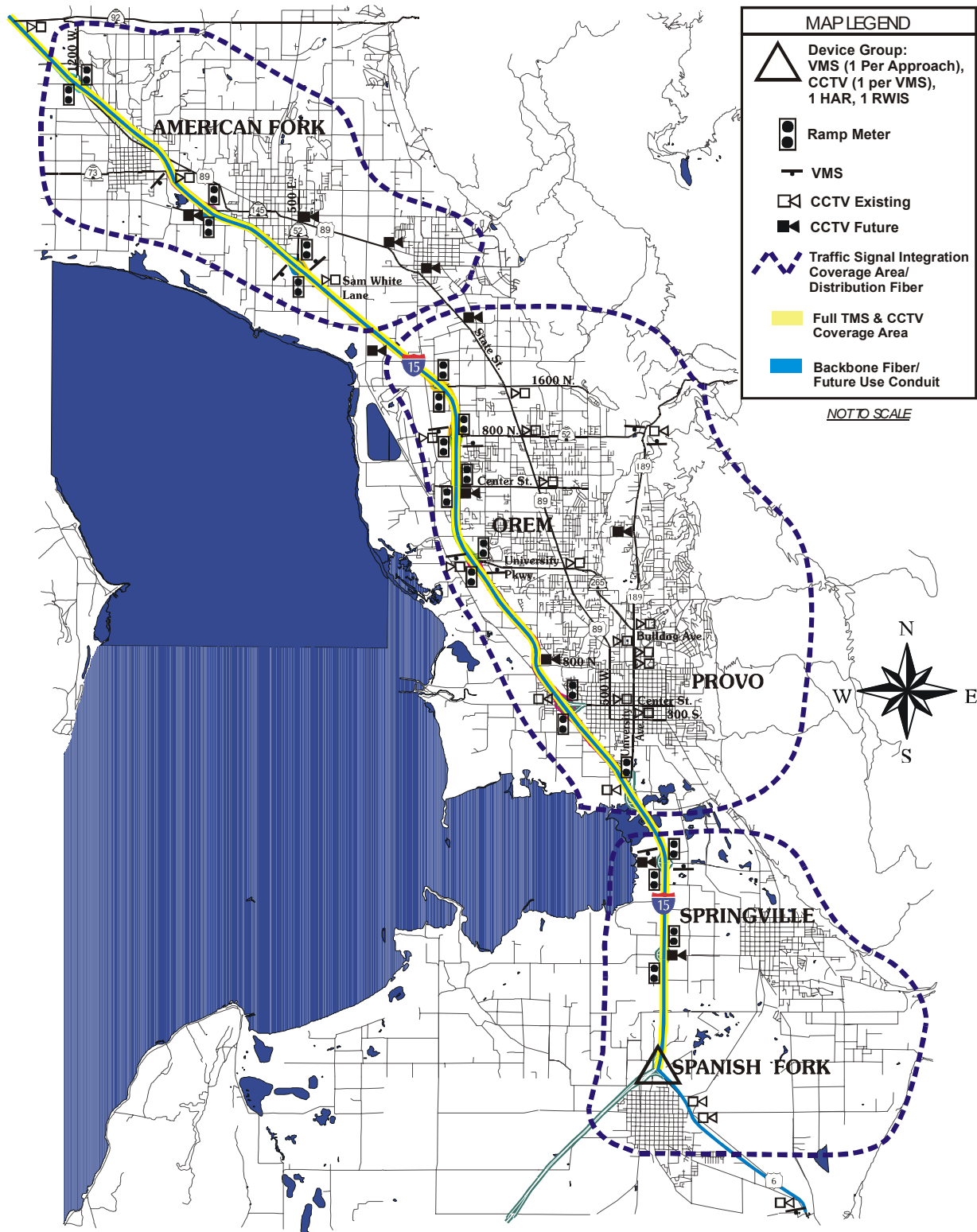
### **3.4 Region 3 ITS Projects**

Region 3 covers a thin section across the middle of the State from Nevada to Colorado and serves the following counties: Juab, Utah, Wasatch, Duchesne, and Uintah.

ATMS expansion from Region 2 will extend in the southerly direction along I-15 making deployment into Region 3 cost effective and allows new devices to be integrated with the TOC and existing ATMS network. The ATMS fiber optic communications network will be extended south from Hub 12 at the Point of the Mountain to SR6 in Spanish Fork. This infrastructure will also tie into the Region 3 headquarters in Orem City. Connections to Utah County municipalities will be achieved through integration of existing locally owned fiber optic networks, with interconnecting gaps being filled in through smaller construction projects.

Devices such as VMS, CCTV, and TMS will be spread east and west to support deployments in Orem City, Springville, Pleasant Grove, Lindon, Provo, and Lehi. Integration of state and municipal traffic control centers in the Orem / Provo urban area is viewed as a major priority item to be completed, and will enable the sharing of traffic signal management, CCTV, and sign use. Extension of the communications backbone along SR6 from Spanish Fork to the Region boundary (and beyond to I-70) is another goal that will likely only be completed in conjunction with other construction projects.

The deployment of ITS devices in the rural areas will continue to include RWIS, VMS, CCTV, and HAR at congested, special needs (e.g., weather, high-accident prone), or route decision making sites. Appendix A lists relevant STIP projects for Region 3 that could be used to facilitate deployment of these future ITS projects. Exhibits 6 and 7 illustrate the locations of these projects.



**Exhibit 7: Region 3 ITS Projects**

#### SUMMARY OF 5-YEAR REGION 3 DEPLOYMENT GOALS

##### New Agency / System Interconnects:

- Expand fiber backbone from TOC to Region 3 headquarters and establish local TCC facility
- Establish links to local municipalities (especially Orem and Provo control centers)
- Establish links to local EMS dispatch centers
- Install *icons*<sup>TM</sup> server and migrate control of local signals to this central operating platform

##### Communication Enhancements:

- Fiber interconnect along I-15 from point of the mountain to SR6
- Fiber interconnect along SR6 from I-15 to the Region 3 boundary (and beyond to I-70)

##### Construction of additional ATMS devices

- Integrate and expand CCTV and TMS coverage along freeway and local arterials
- Expand RWIS and HAR coverage in rural areas

### 3.5 Region 4 ITS Projects

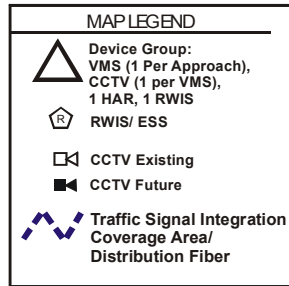
#### Discussion

Region 4 is UDOT's southern-most division and encompasses the largest geographical area. This area is also the most rural area of the State and includes numerous State and National Parks that serve thousands of visitors annually. Divided into 3 districts, the following counties are served by Region 4: Millard, Beaver, Iron, Washington, Sampaete, Sevier, Piute, Garfield, Kane, Carbon, Emery, Grand, Wayne, and San Juan.

The major challenge to ITS deployment in this Region will be to establish a communications network throughout this vast geography. The deployment need for ITS devices in the rural areas will continue to include RWIS, VMS, CCTV, and HAR at congested, special needs areas (e.g., weather, high-accident prone), or route decision making sites. Close coordination with the Region and local municipalities are more essential for this Region than others because of the geographical distance from Salt Lake. This coordination is important to ensure local needs are met and state standards are maintained.

Initial deployment of ITS in the St. George and Richfield areas are high priorities for the ITS Division, and will initially consist of the deployment of an *icons*<sup>TM</sup> server to support the traffic signal operations within these two cities. An *icons*<sup>TM</sup> traffic signal server is planned for both locations to eventually support the maintenance and management of all traffic signals within the Region, and to initially address the lack of a high-speed data connection between the two sites. A more detailed deployment plan for the Dixie area has been developed to define in greater detail, the desired ITS deployments and integration plans between the state and City of St. George.

Appendix A lists relevant STIP projects for Region 4 that could be used to facilitate deployment of these future ITS projects. Exhibit 8 illustrates the locations of these projects. Most of the devices deployed along I-15 in this Region, lie between the Utah-Arizona border and the interchange with I-70. Also, device expansion along I-70 from I-15, towards the Colorado border, is envisioned.



NOT TO SCALE

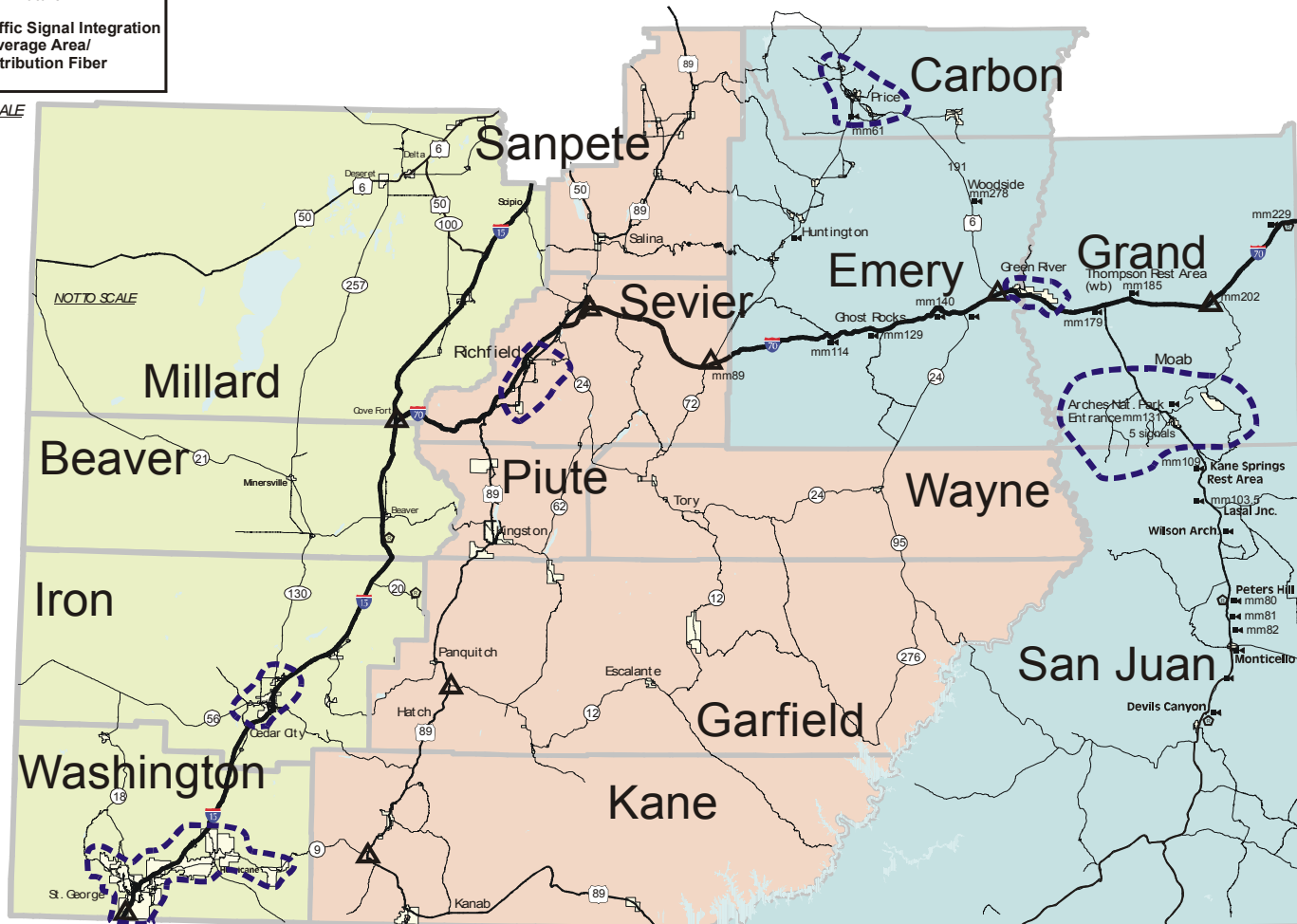


Exhibit 8: Region 4

#### SUMMARY OF 5-YEAR REGION 4 DEPLOYMENT GOALS

##### Communication Enhancements:

- Extension of communication infrastructure to accommodate rural and dispersed field deployments
- Improving communications and coordination with local DPS dispatch centers

##### CommuterLink Enhancements:

- Establish TCC facility in Region headquarters
- Deploy new RWIS at critical weather locations
- Install *icons*<sup>TM</sup> server and migrate control of local signals to this platform
- Deploy VMS and/or HAR devices in advance of major decision making sites
- Expand ATIS role with National Parks
- Expand CVO monitoring



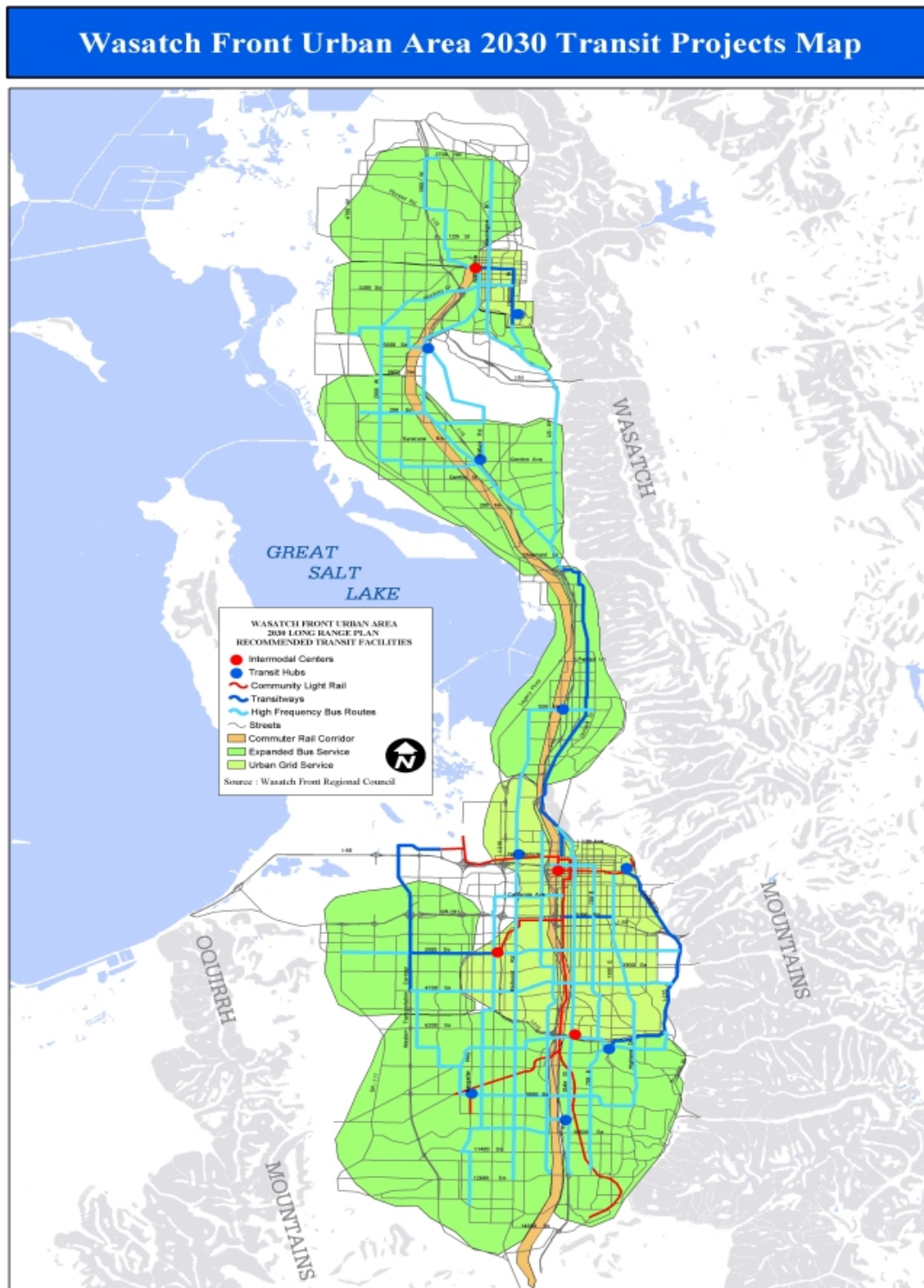
### **3.6 Utah Transit Authority**

The goal of including transit corridors in the CommuterLink ATMS plan is to identify areas where coordination and cooperation can maximize public expenditures when installing or upgrading transportation systems and technology components. Areas where these planned corridors and roadway construction projects coincide should, as a minimum, identify ATMS elements (i.e., CCTV and traffic signal integration at transit hubs, traffic signal priority, etc.) that could be included to improve the effectiveness of either agency, and thus reduce the cost and impacts of future deployments.

UTA and CommuterLink share a common objective of helping to delay the need for expensive road construction and lane widening, by effectively reducing the amount of peak hour congestion. UTA accomplishes this objective by encouraging the use of public transit, while the CommuterLink system focuses on the dissemination of traffic information to the public to encourage modal shifts in their driving patterns. This information, if believed to be timely, reliable, and useful, has been shown to be effective in promoting diversions and behavioral shifts in motorists' driving patterns, particularly in response to incidents and special events.

Enhancing the integration between these two agencies is therefore a logical next step in the evolution of CommuterLink, and will require a greater sharing of resources to help prioritize, design, and build systems that serve both agencies. Although the operational requirements of both agencies are different, the need to share information and monitor system status is common to both. If projects are closely coordinated, joint deployments can effectively serve to meet the requirements and goals of both UTA and UDOT.

Exhibit 9 illustrates the proposed Public Transit Map for the Wasatch Front area. Map source is from the Wasatch Front Regional Council (WFRC) Long Range Transportation Plan (2002-2030). Additional details can also be obtained by contacting WFRC or the Mountainland Association of Governments (MAG).



**Exhibit 9: Public Transit Map for Wasatch Front**

SUMMARY OF 30 YEAR TRANSIT PLAN
<p>CommuterLink Enhancements:</p> <ul style="list-style-type: none"><li>• Instrument new transit corridors with ATMS communications and devices</li><li>• Enhance CommuterLink traveler information systems to provide seamlessly reporting of real-time traffic or transit information (511, web, wireless, etc.)</li><li>• Enhance data sharing to improve incident response and traffic / transit management efforts (special events, incidents, emergency evacuations, etc.)</li></ul>

## **APPENDIX A – STIP DEPLOYMENT PROJECTS**

Region	County	Route_no	Proj_no	Proj_lo	Proj_con	Cost	Fd_Srce	PIN_no	CID_no	Ref_no	Potential ATMS Deployments							
											Comm. Infrastructure	CCTV	VMS	TMS	ESS / RWIS	HAR	Signals	Ramp Meter
1	Box Elder	1100	STP-1100(2)0	Watery Lane; SR-13 to 900 North, Brigham City, Phase I	Road - Asphalt Pavement Reconstruction	\$1,072,616.00	Any Area - Small Urban	426	05157	*10	x			x				
1	Box Elder	84/15	IM-15-8(103)379	I-15; Elwood to West Tremonton Interchange	Road - Asphalt Pavement Rehabilitation	\$10,200,000.00	Interstate Maintenance	2275	50634	59	x			x				
1	Box Elder	1100	STP-1100(2)0	Watery Lane; SR-13 to 900 North, Brigham City, Phase II	Road - Asphalt Pavement Reconstruction	\$536,308.00	Any Area - Small Urban	426	05157	*10	x			x				
1	Box Elder	84	IM-84-6(82)0	I-84; Idaho State Line to Snowville	Road - Asphalt Pavement Rehabilitation	\$6,600,000.00	Interstate Maintenance	3654	50845	315	x			x				
1	Box Elder	LC03	BRO-LC03( )	Bridge; 5200 West 8000 North over Corinne Canal in Elwood	Bridge - Replacement #003033C	\$312,500.00	Bridge Off System Local			311	x	x	x		x			
1	Box Elder	LC03	BRO-LC03( )	Bridge; Elwood town Road over Malad river South side of Elwood	Bridge - Replacement #003035V	\$312,500.00	Bridge Off System Local			295	x	x	x		x			
1	Box Elder	91	SP-0091(8)1	Interchange; SR-91 & 1100 South, Brigham City	Interchange - New Construction	\$10,000,000.00	Centennial Highway	1952	78023	*06	x	x	x	x	x	x	x	x
1	Box Elder	83/13	STP-0013( )8	Intersection; SR-13 & SR-83, Corinne	Intersection - Improvements	\$1,800,000.00	Any Area - Statewide	2568	70157	96	x	x	x	x			x	
1	Box Elder	15	IM-15-8( )365	I-15; Brigham City to Corinne	Road - Asphalt Pavement Rehabilitation	\$3,300,000.00	National Highway System	3380	70258	74	x			x				
1	Box Elder	13	BHF-0013( )8	SR-13; Over Bear River at 1 Mi. East of Corinne	Bridge - Rehabilitation #C-447	\$1,500,000.00	Bridge On System State	3737		327	x	x	x		x			
1	Box Elder	102	BRF-0102( )17	SR-102; Over Corinne Canal at Haws Corner	Bridge - Replacement with Box Culvert #D-446	\$1,200,000.00	Bridge On System State	3739		279	x	x	x		x			
1	Box Elder	91	SP-0091(8)1	Interchange; SR-91 & 1100 South, Brigham City	Interchange - New Construction	\$11,000,000.00	Centennial Highway	1952	78023	*06	x	x	x	x	x	x	x	x
1	Box Elder	LC03	STP-LC03( )	2000 West from Main Street to 1000 North	Road - Asphalt Pavement New Construction	\$1,072,616.00	Any Area - Small Urban			309	x			x				
1	Box Elder	13	STP-0013( )1	SR-13; Brigham City Main	Road - Asphalt Pavement Rehabilitation	\$2,900,000.00	Any Area - Statewide	3374	70254	71	x			x				
1	Box Elder	13	STP-0013( )3	SR-13; Brigham City to I-15	Road - Asphalt Pavement Rehabilitation	\$2,300,000.00	Any Area - Statewide	3376	70255	72	x			x				
1	Box Elder	13	STP-0013( )6	SR-13; I-15 to Corinne	Road - Asphalt Pavement Rehabilitation	\$1,300,000.00	Any Area - Statewide	3378	70256	73	x			x				
1	Cache	89	SP-0089(50)409	Logan Canyon; Summit to Garden City	Road - Asphalt Pavement Reconstruction & Widen	\$700,000.00	Centennial Highway	2497	78040	*11	x			x				
1	Cache	91	SP-0091(9)32	SR-91; Smithfield to Idaho Line	Road - Widen to Four Lanes	\$12,000,000.00	Centennial Highway	772	78024	*460	x	x	x	x	x	x	x	
1	Cache	89	BRF-0089( )375	Bridge; SR-89 Logan River Bridge Mouth Of Canyon	Bridge - Replacement #D-674	\$2,700,000.00	Bridge On System State	3382	70261	76	x	x	x		x			
1	Cache	23	BRF-0023(5)19	East Edge of Newton	Bridge - Replacement #E-635	\$300,000.00	Bridge On System State	3334	50754	67	x	x	x		x			
1	Cache	LC05	STP-LC05(13)	RR Crossing; 600 West & 14th North	Railroad Crossing - Improvement #806354Y	\$268,154.00	Railroad Crossings	2991	50753	97	x							
1	Cache	89	SP-0089(50)409	Logan Canyon; Summit to Garden City	Road - Asphalt Pavement Reconstruction & Widen	\$5,500,000.00	Centennial Highway	2497	78040	*11	x			x				
1	Cache	1232	STP-1232(1)1	200 East - 1400 North to 2500 North	Road - New Construction	\$1,230,000.00	Any Area - Cache	3520	50742	276	x	x	x	x	x		x	
1	Cache	91	SP-0091(9)32	SR-91; Smithfield to Idaho Line	Road - Widen to Four Lanes	\$17,409,000.00	Centennial Highway	772	78024	*460	x	x	x	x	x	x	x	
1	Cache	89	BRF-0089(68)373	Bridge; SR-89 Logan Canyon	Bridge - Replacement #D707	\$1,600,000.00	Bridge On System State	3384	50846	75	x	x	x		x			
1	Cache	89	SP-0089(50)409	Logan Canyon; Summit to Garden City	Road - Asphalt Pavement Reconstruction & Widen	\$12,466,000.00	Centennial Highway	2497	78040	*11	x			x				
1	Cache	89	BRF-0089( )379	SR-89; Over Logan River at 3.3 Mi East of Logan	Bridge - Replacement #D-675	\$1,600,000.00	Bridge On System State	3741		329	x	x	x		x			
1	Cache	91	STP-0091( )32	SR-91; Smithfield Main	Road - Asphalt Pavement Rehabilitation	\$3,420,000.00	Any Area - Statewide	3386		235	x			x				
1	Cache	89	NH-0089( )374	SR-89; Dugway Near Logan County Club	Road - Widen to Four Lanes	\$3,000,000.00	National Highway System	3743		283	x	x	x	x	x		x	

Region	County	Route_no	Proj_no	Proj_lo	Proj_con	Cost	Fd_Srce	PIN_no	CID_no	Ref_no	Potential ATMS Deployments							
											Comm. Infrastructure	CCTV	VMS	TMS	ESS / RWIS	HAR	Signals	Ramp Meter
1	Davis	89	HPP-0089(45)341	Interchange; US-89 & 200 North, Kaysville	Interchange - Improvements	\$555,750.00	High Priority Projects	2439	50412	90	x	x	x	x	x	x	x	x
1	Davis	126	STP-0126(6)6	SR-126; Main street @ 300 North, Clearfield	Intersection - Improvements	\$720,000.00	Hazard Elimination	3312	50782	240	x	x	x	x			x	
1	Davis	89	SP-0089(55)334	Mountain Road; I-15 to Harrison Blvd, Ogden	Road - Asphalt Pavement Reconstruction	\$35,265,000.00	Centennial Highway	2965	78055	*07	x			x				
1	Davis	108	STP-0108(7)3	Syracuse Road; Main Street to 1000 W, Clearfield	Road - Widen to Five Lanes	\$4,279,738.00	Minimum Guarantee	3000	50474	*12	x	x	x	x			x	
1	Davis	108	STP-0108(7)3	Syracuse Road; Main Street to 1000 W, Clearfield	Road - Widen to Five Lanes	\$4,226,657.00	Ogden Urban Area	3000	50474	*12	x	x	x	x			x	
1	Davis	89	SP-0089(55)334	Mountain Road; I-15 to Harrison Blvd, Ogden	Road - Asphalt Pavement Reconstruction	\$8,000,000.00	Centennial Highway	2965	78055	*07	x			x				
1	Davis	108	STP-0108(7)3	Syracuse Road; 1000 to 2000 West, Syracuse	Road - Widen to Five Lanes	\$3,830,312.00	Ogden Urban Area	2445	50474	*12	x	x	x	x			x	
1	Davis	15	CM-9999( )	Intersection; Antelope Drive & I-15 Ramp, Layton**	Intersection - Improvements	\$1,031,857.00	CMAQ (WFRC Area)			102	x	x	x	x			x	x
1	Davis	232	STP-0232( )0	SR-232; From SR-126 to Gordon Ave.	Road - Widen / Add Truning Lanes / Safety	\$1,500,000.00	Safety Any Area	3745		339	x	x	x	x	x	x	x	
1	Davis	108	STP-0108(7)3	Syracuse Road; 1000 to 2000 West, Syracuse	Road - Widen to Five Lanes	\$5,363,081.00	Ogden Urban Area	2445	50474	*12	x	x	x	x			x	
1	Morgan	84	IM-84-6(81)73	Bridge; I-84 over Weber River, 1.2 mi E of Taggarts	Bridge - Rehabilitation #F-153	\$1,000,000.00	Interstate Maintenance	2969	50786	94	x	x	x		x			
1	Morgan	167	BHF-0167(1)1	1.2 Miles from Mountain Green	Bridge - Rehabilitation #D-260	\$300,000.00	Bridge On System State	3336	50755	68	x	x	x		x			
1	Morgan	60	BRF-0060(1)1	SR-60; Bridge Over UP & L Penstock Pipe	Bridge - Replacement #D-499	\$788,000.00	Bridge On System State	1712	50245	98	x	x	x		x			
1	Morgan	84	IM-84-6(103)55	I-84; Mtn Green Interchange to Morgan	Road - Asphalt Pavement Rehabilitation	\$15,400,000.00	Interstate Maintenance	2560	50592	*93	x			x				
1	Morgan	84	IM-84-6(103)55	I-84; Mtn Green Interchange to Morgan	Road - Asphalt Pavement Rehabilitation	\$6,600,000.00	Interstate Maintenance	2560	50592	*93	x			x				
1	Rich	89	NH-STP-0089(21)407	Bear Lake Overlook Rest Area; Logan Cyn E of Garden City	Rest Area - New Construction	\$2,491,910.00	National Highway System	1205	05199	433		x	x	x	x	x		
1	Rich	30	BHF-0030(15)133	2.3 Miles West of Wyoming State Line	Bridge - Rehabilitation #A-388	\$300,000.00	Bridge On System State	3338	50756	69	x	x	x		x			
1	Various	Var	SP-	Region 1 Contingency Funds	Actions by Region Director	\$750,000.00	State Construction			108	x	x	x	x	x	x	x	x
1	Various	Var	SP-	Region 1 Contingency Funds	Actions by Region Director	\$750,000.00	State Construction			363	x	x	x	x	x	x	x	x
1	Various	Var	SP-	Region 1 Contingency Funds	Actions by Region Director	\$750,000.00	State Construction			364	x	x	x	x	x	x	x	x
1	Weber	Var	CM-9999( )	Region 1 Commuter Link	ITS/ATMS - Commuter Link	\$643,569.00	CMAQ (WFRC Area)			*01	x	x	x	x	x	x	x	x
1	Weber	Var	CM-9999(233)	Layton Area	ITS/ATMS - Signal Coordination	\$1,061,890.00	CMAQ (WFRC Area)	2580	50479	*31	x	x	x	x	x	x	x	x
1	Weber	134	STP-0134(2)11	2700 North; I-15 to Washington, Ogden	Railroad Crossing - Improvement #805946F	\$360,000.00	Railroad Crossings	2572	78049	*08	x							
1	Weber	3458	STP-3458(1)0	2700 North; US-89 to Washington Blvd, Ogden	Road - New Construction	\$4,098,466.00	Ogden Urban Area	2582	50475	462	x	x	x	x	x		x	
1	Weber	3462	HPP-3462(1)3	North Ogden Divide Road	Road - Safety Improvements	\$1,658,000.00	High Priority Projects	3144	50678	65	x	x	x	x	x		x	
1	Weber	134	SP-0134(2)11	2700 North; I-15 to Washington, Ogden	Road - Widen to Four Lanes	\$4,500,000.00	Centennial Highway	2572	78049	*08	x	x	x	x			x	
1	Weber	79	SP-0079(3)3	31st Street; Wall Ave to Harrison, Ogden	Road - Widen to Four Lanes	\$24,000,000.00	Centennial Highway	1859	78012	91	x	x	x	x			x	
1	Weber	26	SP-0026(4)0	Riverdale Road; I-15 to Washington, Ogden	Road - Widen to Six Lanes	\$1,500,000.00	Centennial Highway	2495	78041	*13	x	x	x	x	x		x	x
1	Weber	3328	STP-3328(1)0	300 West; Riverdale Road to 4400 South, Ogden	Road - Widen to Three Lanes	\$2,339,755.00	Ogden Urban Area	2463	50473	77	x	x	x	x	x		x	



Region	County	Route_no	Proj_no	Proj_lo	Proj_con	Cost	Fd_Srce	PIN_no	CID_no	Ref_no	Potential ATMS Deployments							
											Comm. Infrastructure	CCTV	VMS	TMS	ESS / RWIS	HAR	Signals	Ramp Meter
1	Weber	89	NH-0089(73)359	SR-89; Wall Ave to 2700 North, Ogden	Road - Asphalt Pavement Rehabilitation	\$10,000,000.00	National Highway System	3779	50908	100	x			x				
1	Weber	134	SP-0134(2)11	2700 North; I-15 to Washington, Ogden	Road - Widen to Four Lanes	\$6,000,000.00	Centennial Highway	2572	78049	*08	x	x	x	x			x	
1	Weber	26	SP-0026(4)0	Riverdale Road; I-15 to Washington, Ogden	Road - Widen to Six Lanes	\$2,500,000.00	Centennial Highway	2495	78041	*13	x	x	x	x	x		x	x
1	Weber	26	BRF-0026( )1	SR-26; Riverdale Road over I-15 at Interchange	Bridge - Replacement #C-453	\$5,300,000.00	Bridge On System State	3747		331	x	x	x		x			
1	Weber	84	IM-84-6( )81	Bridge; Riverdale Road over I-84, Riverdale**	Bridge - Replacement #D-704	\$5,350,000.00	Interstate Maintenance	542	70011	99	x	x	x		x			
1	Weber	Var	CM-9999( )	Region 1 Commuter Link**	ITS/ATMS - Commuter Link	\$1,072,616.00	CMAQ (WFRC Area)			*01	x	x	x	x	x	x	x	x
1	Weber	89	NH-0089( )345	SR-89; Uintah Junction to SR-203	Road - Asphalt Pavement Rehabilitation	\$2,240,000.00	National Highway System	3390		78	x			x				
1	Weber	89	NH-0089( )347	SR-89; SR-203 to 40th Street	Road - Asphalt Pavement Rehabilitation	\$1,600,000.00	National Highway System	3392		80	x			x				
1	Weber	26	SP-0026(4)0	Riverdale Road; I-15 to Washington, Ogden	Road - Widen to Six Lanes	\$10,483,000.00	Centennial Highway	2495	78041	*13	x	x	x	x	x		x	x
1	Weber	26	SP-0026(4)0	Riverdale Road; I-15 to Washington, Ogden**	Road - Widen to Six Lanes	\$13,500,000.00	Centennial Highway	2495	78041	*13	x	x	x	x	x		x	x
1	Weber	15	SP-15-8(34)342	I-15; 31st Street to 2700 North, Ogden	Road - Widen to Six Lanes	\$158,276,000.00	Centennial Highway	2570	78050	*14	x	x	x	x	x		x	x
1	Weber	15	SP-15-8(34)342	I-15; 31st Street to 2700 North, Ogden**	Road - Widen to Six Lanes	\$17,300,000.00	Centennial Highway	2570	78050	*14	x	x	x	x	x		x	x
2	Davis	68	STP-0068( )68	500 South; 1100 West to I-15, West Bountiful	Road - Widen to Five Lanes	\$1,908,184.00	Salt Lake Urban Area			*33	x	x	x	x			x	
2	Davis	67	SP-0067(1)0	Legacy Parkway; I-215 to Farmington	Road - New Construction	\$69,585,000.00	Centennial Highway	1793	70004	*25	x	x	x	x	x		x	
2	Davis	68	STP-0068( )68	500 South; 1100 West to I-15, West Bountiful	Road - Widen to Five Lanes	\$6,209,375.00	Salt Lake Urban Area			*33	x	x	x	x			x	
2	Salt Lake	LC35	BRO-LC35(128)	700 South and Jordan River Bridge in Salt Lake	Bridge - Replacement #035096F1	\$1,281,250.00	Bridge Off System Local	3342	50759	82	x	x	x		x			
2	Salt Lake	201	NH-BRF-0201(4)2	Bridge; SR-201 over Copper Co Haul Rd near KCC Magna Plant	Bridge - Replacement #F-28	\$2,000,000.00	Bridge On System State	2604	50425	*92	x	x	x		x			
2	Salt Lake	201	NH-BRF-0201(4)2	Bridge; SR-201 over Copper Co Haul Rd near KCC Magna Plant	Bridge - Replacement #F-28	\$475,000.00	National Highway System	2604	50425	*92	x	x	x		x			
2	Salt Lake	15	SP-15-7(135)296	I-15; 10800 South to 600 North, S L	Convert Advance Construction	\$5,555,000.00	Bridge On System State	1560		*17	x	x	x	x	x		x	
2	Salt Lake	LC35	HPP-LC35( )	10000 South Underpass, Sandy	Convert Advance Construction	\$771,210.00	High Priority Projects	1560		*17	x	x	x					
2	Salt Lake	2116	HPP-2116(1)0	7200 South Widening, S L	Convert Advance Construction	\$229,140.00	High Priority Projects	327	50043	129	x	x	x	x			x	
2	Salt Lake	15	SP-15-7(135)296	I-15; 10800 South to 600 North, S L	Convert Advance Construction	\$17,966,000.00	Interstate Maintenance	1560		*17	x	x	x	x	x		x	
2	Salt Lake	15	SP-15-7(135)296	I-15; 10800 South to 600 North, S L	Convert Advance Construction	\$5,279,000.00	Minimum Guarantee	1560		*17	x	x	x	x	x		x	
2	Salt Lake	15	SP-15-7(135)296	I-15; 10800 South to 600 North, S L	Convert Advance Construction	\$13,522,000.00	National Highway System	1560		*17	x	x	x	x	x		x	
2	Salt Lake	215	IM-NH-215-9(102)18	I-215; 300 East to Redwood Road, S L	Convert Advance Construction	\$4,000,000.00	National Highway System	544	05298	411	x	x	x	x	x		x	x
2	Salt Lake	2082	STP-2082(8)10	Intersection; 2000 East & Fort Union Blvd, S L	Intersection - Improvements	\$876,000.00	Salt Lake Urban Area	2489	50484	428	x	x	x	x			x	
2	Salt Lake	2082	STP-2082(8)10	Intersection; 2000 East & Bengal Blvd, S L	Intersection - Improvements	\$802,000.00	Salt Lake Urban Area	2489	50484	429	x	x	x	x			x	

Region	County	Route_no	Proj_no	Proj_lo	Proj_con	Cost	Fd_Srce	PIN_no	CID_no	Ref_no	Potential ATMS Deployments							
											Comm. Infrastructure	CCTV	VMS	TMS	ESS / RWIS	HAR	Signals	Ramp Meter
2	Salt Lake	Var	CM-9999(188)	Various in S L Co	ITS/ATMS - Incident Management	\$103,740.00	CMAQ (WFRC Area)	2043	50211	*22	x	x	x	x	x	x	x	x
2	Salt Lake	Var	CM-9999( )	WFRC Area	ITS/ATMS - Traffic System Management	\$1,876,096.00	CMAQ (WFRC Area)			*19	x	x	x	x	x	x	x	x
2	Salt Lake	15	SP-15-7(167)288	I-15; Beck Street Overpass	Road - Asphalt Pavement Reconstruction	\$4,000,000.00	Quarter of Quarter	3527	79003	395	x			x				
2	Salt Lake	201	STP-0201(5)17	2100 South; 900 West to Redwood Road, S L	Road - Asphalt Pavement Reconstruction	\$5,995,924.00	Salt Lake Urban Area	2485	50482	151	x			x				
2	Salt Lake	201	NH-BRF-0201(4)2	SR-201; SR-202 to 9000 West, S L	Road - Asphalt Pavement Rehabilitation	\$2,100,000.00	National Highway System	2604	50425	*92	x			x				
2	Salt Lake	151	SP-0151(2)0	10600 South; Redwood Road to Bangerter, S L	Road - New Construction	\$7,000,000.00	Centennial Highway	1845	78005	*26	x	x	x	x	x		x	
2	Salt Lake	2148	HPP-2148(1)0	Main St Extension; 5600 S to Vine St, S L	Road - New Construction	\$2,111,850.00	High Priority Projects	2256	50344	*30	x	x	x	x	x		x	
2	Salt Lake	215	SP-215-9( )	I-215; Jordan River to 4700 South	Road - Widen From Three to Five Lanes	\$35,000,000.00	Quarter of Quarter			430				x				x
2	Salt Lake	171	SP-0171(3)4	3500 South; 5600 to 2700 West, S L	Road - Widen to Five Lanes	\$4,000,000.00	Centennial Highway	2612	78052	*27	x	x	x	x			x	
2	Salt Lake	68	SP-0068(14)47	Redwood Road; 9000 South to 12300 South, S L	Road - Widen to Five Lanes	\$18,000,000.00	Centennial Highway	2319	78036	*28	x	x	x	x			x	
2	Salt Lake	0071	STP-0071(11)10	900 East; 6000 to 6300 South, S L	Road - Widen to Five Lanes	\$1,133,755.00	Salt Lake Urban Area	2901	50737	127	x	x	x	x			x	
2	Salt Lake	71	SP-0071(6)1	12300 South; 700 East to Jordan River, S L	Road - Widen to Four Lanes	\$50,000,000.00	Centennial Highway	2174	50281	*29	x	x	x	x	x		x	
2	Salt Lake	71	HPP-0071(6)1	12300 South; 265 West to 700 East, S L	Road - Widen to Four Lanes	\$1,162,800.00	High Priority Projects	2174	50281	*29	x	x	x	x	x		x	
2	Salt Lake	172	HPP-0172(2)3	5600 West; 4100 to 2100 South, S L	Road - Widen to Four Lanes	\$812,250.00	High Priority Projects	2186	50317	107	x	x	x	x	x		x	
2	Salt Lake	48	HPP-0048(14)9	7800 South; 1300 West to Bangerter, S L	Road - Widen to Four Lanes	\$1,000,350.00	High Priority Projects	2240	50342	417	x	x	x	x	x		x	
2	Salt Lake	15	BHF-15-7(207)312	1100 North Interchange over I-15, Salt Lake County	Bridge - Rehabilitation #C-390	\$800,000.00	Bridge On System State	3432	50848	84	x	x	x		x			
2	Salt Lake	215	IBRFIBHF-215-9(110)2	Bridge; I-215 over 3760 South and 3900 South, S L	Bridge - Replace #F-163 & Rehab. C-518	\$4,450,000.00	Bridge On System State	3017	50851	158	x	x	x		x			
2	Salt Lake	201	SP-0201(5)13	2100 South; Bangerter to Jordan River, S L	Interchange - Improvements	\$45,000,000.00	Centennial Highway	2977	78056	*32	x	x	x	x	x		x	
2	Salt Lake	209	CM-0209(12)11	Intersection; 1300 East & 9400 South, S L	Intersection - Improvements	\$1,795,559.00	CMAQ (WFRC Area)	2499	50486	*34	x	x	x	x			x	
2	Salt Lake	Var	CM-9999(188)	Various in S L Co	ITS/ATMS - Incident Management	\$216,668.00	CMAQ (WFRC Area)	2043	50211	*22	x	x	x	x	x	x	x	x
2	Salt Lake	Var	CM-9999( )	WFRC Area	ITS/ATMS - Traffic System Management	\$2,145,232.00	CMAQ (WFRC Area)			*19	x	x	x	x	x	x	x	x
2	Salt Lake	LC35	STP-LC35(128)	RR Crossing; 4700 South & 5550 West, S L	Railroad Crossing - Improvement #254958B	\$268,154.00	Railroad Crossings	3340	50757	150	x							
2	Salt Lake	48	STP-0048(16)8	RR Crossing; 7800 South & 4600 West, West Jordan	Railroad Crossing - Improvement #254963X	\$321,785.00	Railroad Crossings	2642	50521	145	x							
2	Salt Lake	LC35	STP-LC35(132)	RR Crossing; 900 West & South Temple, SLC	Railroad Crossing - Improvement #805835N	\$53,630.00	Railroad Crossings	3442	50854	164	x							
2	Salt Lake	LC35	STP-LC35(133)	RR Crossing; 40 South 900 West, S L	Railroad Crossing - Improvement #834452P	\$21,452.00	Railroad Crossings	3444	50855	165	x							
2	Salt Lake	15	SP-15-7(167)288	I-15; 10600 South to Utah County Line	Road - Asphalt Pavement Reconstruction / Widen	\$36,000,000.00	Quarter of Quarter	3525	79002	*336	x			x				
2	Salt Lake	215	NH-215-9(112)14	I-215; Redwood Road to 5400 S (west side), S L	Road - Concrete Pavement Rehabilitation	\$6,500,000.00	National Highway System	3019	50853	159	x			x				
2	Salt Lake	68	STP-0068(15)55	SR-68; Redwood Road, 3100 South to 2100 South	Road - Rotomill & Overlay	\$800,000.00	Any Area - Statewide	3440	50849	*15	x			x				

Region	County	Route_no	Proj_no	Proj_lo	Proj_con	Cost	Fd_Srce	PIN_no	CID_no	Ref_no	Potential ATMS Deployments							
											Comm. Infrastructure	CCTV	VMS	TMS	ESS / RWIS	HAR	Signals	Ramp Meter
2	Salt Lake	173	STP-0173(3)5	SR-173; 5400 South, 3200 West to 1900 West	Road - Rotomill & Overlay	\$1,430,000.00	Any Area - Statewide	3434	50850	86	x			x				
2	Salt Lake	15	IM-15-7(206)312	I-15; 600 North to Beck Street, S L	Road - Rotomill & Overlay	\$4,700,000.00	Interstate Maintenance	2584	50641	146	x			x				
2	Salt Lake	71	STP-0071(13)16	700 East; 3300 to 400 South, S L	Road - Rotomill & Overlay	\$4,600,000.00	Minimum Guarantee	2594	50883	162	x			x				
2	Salt Lake	215	SP-215-9( )	I-215; 4700 South to 2100 South	Road - Widen From Three to Five Lanes	\$29,000,000.00	Quarter of Quarter			431								x
2	Salt Lake	171	SP-0171(3)4	3500 South; 5600 to 2700 West, S L	Road - Widen to Five Lanes	\$43,998,000.00	Centennial Highway	2612	78052	*27	x	x	x	x			x	
2	Salt Lake	68	SP-0068(14)47	Redwood Road; 9000 South to 12300 South, S L	Road - Widen to Five Lanes	\$20,934,000.00	Centennial Highway	2319	78036	*28	x	x	x	x			x	
2	Salt Lake	151	SP-0151(1)0	10600 South; Redwood Road to Bangeter, S L	Road - Widen to Four Lanes	\$12,000,000.00	Centennial Highway	1845	78005	*26	x	x	x	x	x		x	
2	Salt Lake	71	SP-0071(6)1	12300 South; 700 East to Jordan River, S L	Road - Widen to Four Lanes	\$24,000,000.00	Centennial Highway	2174	50281	*29	x	x	x	x	x		x	
2	Salt Lake	71	STP-0071(9)7	700 East; 9400 to 10600 South, S L	Road - Widen to Four Lanes	\$5,789,000.00	Salt Lake Urban Area	2524	50493	35	x	x	x	x	x		x	
2	Salt Lake	68	SP-0068(14)47	Redwood Road; 9000 South to 12300 South, S L	Road - Widen to Five Lanes	\$4,000,000.00	Centennial Highway	2319	78036	*28	x	x	x	x			x	
2	Salt Lake	71	SP-0071(6)1	12300 South; 700 East to Jordan River, S L	Road - Widen to Four Lanes	\$3,497,000.00	Centennial Highway	2174	50281	*29	x	x	x	x	x		x	
2	Salt Lake	68	BHF-0068( )45	SR-68; Various Bridges on Redwood Road	Bridge - Rehabilitation # Various	\$3,000,000.00	Bridge On System State	3751		405	x	x	x		x			
2	Salt Lake	190	BHF-0190( )5	Bridge; SR-190 over Big Cottonwood Ck near Maxfield Lodge	Bridge - Rehabilitation #D-258	\$1,000,000.00	Bridge Optional State	2626		156	x	x	x		x			
2	Salt Lake	266	BHF-0266( )8	Bridge; 4430 South over I-215 at Wasatch Blvd, S L	Bridge - Rehabilitation #F-156	\$1,000,000.00	Bridge On System State	3023		157	x	x	x		x			
2	Salt Lake	68	BRF-0068( )63	SR-68; Redwood Road over I-215 North	Bridge - Replacement # C-512	\$1,700,000.00	Bridge On System State	3753		403	x	x	x		x			
2	Salt Lake	71	HPP-0071(7)0	12300 South; Jordan River to Bangarter, S L	Convert Advance Construction	\$1,162,800.00	High Priority Projects	2175	50282	*16	x	x	x	x	x		x	
2	Salt Lake	209	CM-0209(12)11	Intersection; 1300 East & 9400 South, S L**	Intersection - Improvements	\$1,072,616.00	CMAQ (WFRC Area)	2499	50486	*34	x	x	x	x			x	
2	Salt Lake	Var	CM-9999(188)	Various in S L Co**	ITS/ATMS - Incident Management	\$214,523.00	CMAQ (WFRC Area)	2043	50211	*22	x	x	x	x	x	x	x	x
2	Salt Lake	Var	CM-9999( )	WFRC Area**	ITS/ATMS - Traffic System Management	\$2,145,232.00	CMAQ (WFRC Area)			*19	x	x	x	x	x	x	x	x
2	Salt Lake	Var	CM-9999( )	WFRC Area	ITS/ATMS - Traffic System Management	\$2,145,232.00	CMAQ (WFRC Area)			*19	x	x	x	x	x	x	x	x
2	Salt Lake	68	STP-0068(15)55	SR-68; Redwood Road, 3100 South to 2100 South	Road - Asphalt Pavement Reconstruction	\$10,000,000.00	Any Area - Statewide	3440	50849	*15	x			x				
2	Salt Lake	201	SP-0201(5)13	2100 South; Bangarter to Jordan River, S L**	Road - Asphalt Pavement Reconstruction	\$9,971,000.00	Centennial Highway	2977	78056	*32	x			x				
2	Salt Lake	89	STP-0089( )312	State Street; 9000 to 6400 South, S L	Road - Asphalt Pavement Reconstruction	\$9,975,000.00	Minimum Guarantee	3759		121	x			x				
2	Salt Lake	201	NH-0201( )0	SR-201; I-80 to Jct SR-202**	Road - Asphalt Pavement Reconstruction	\$6,500,000.00	National Highway System	3436		103	x			x				
2	Salt Lake	172	NH-0172( )6	SR-172; 5600 West 2100 South to I-80	Road - Asphalt Pavement Reconstruction	\$7,500,000.00	National Highway System	3765		288	x			x				
2	Salt Lake	2094	STP-2094(1)9	3200 West; 4100 to 4700 South, S L	Road - Asphalt Pavement Reconstruction	\$1,711,895.00	Salt Lake Urban Area	2897	50583	125	x			x				
2	Salt Lake	215	IM-215-9( )20	I-215; 2100 South to N Redwood Interchange, S L	Road - Concrete Pavement Rehabilitation	\$2,500,000.00	Interstate Maintenance	3021		160	x			x				

Region	County	Route_no	Proj_no	Proj_lo	Proj_con	Cost	Fd_Srce	PIN_no	CID_no	Ref_no	Potential ATMS Deployments							
											Comm. Infrastructure	CCTV	VMS	TMS	ESS / RWIS	HAR	Signals	Ramp Meter
2	Salt Lake	2082	STP-2082(10)1	Highland Drive; 9800 South to Sego Lily Drive	Road - New Construction	\$3,105,223.00	Salt Lake Urban Area	2914	50595	277	x	x	x	x	x		x	
2	Salt Lake	111	STP-0111( )6	SR-111; 8400 West, 5400 South to 3500 South	Road - Rotomill & Overlay	\$2,000,000.00	Any Area - Statewide	3761		287	x			x				
2	Salt Lake	68	STP-0068( )50	SR-68; Redwood Road; 6600 to 3500 South, S L**	Road - Rotomill & Overlay	\$4,500,000.00	Any Area - Statewide	2592	70148	161	x			x				
2	Salt Lake	171	STP-0171( )0	SR-171; 3500 South 8400 West to 5600 West	Road - Rotomill & Overlay	\$2,200,000.00	Any Area - Statewide	3763		298	x			x				
2	Salt Lake	48	STP-0048( )5	SR-48; 7800 South 6000 West to 2700 West	Road - Rotomill & Overlay	\$2,500,000.00	Any Area - Statewide	3749		324	x			x				
2	Salt Lake	266	NH-0266( )4	SR-266; 4500 South 700 East to I-215 (east side)	Road - Rotomill & Overlay	\$2,300,000.00	National Highway System	3767		296	x			x				
2	Salt Lake	68	STP-0068(13)45	Redwood Road; 12800 to 10400 South, S L	Road - Widen to Five Lanes	\$17,500,000.00	Any Area - Statewide	688	50534	116	x	x	x	x			x	
2	Summit	150	FH-0150( )0	Mirror Lake Highway	Bridge - Replacement #0D212 & #0A-413	\$4,200,000.00	Forest Highway	3456	50781	88	x	x	x		x			
2	Summit	150	STP-0150(6)6	Mirror Lake Highway	Road - Asphalt Pavement New Construction	\$2,200,000.00	Non Urban State	3456	50781	85	x			x				
2	Summit	80	NH-80-3(136)145	I-80; High Ute Ranch to East of Kimball's Jct	Road - Rotomill & Overlay	\$1,800,000.00	National Highway System	3662	50856	332	x			x				
2	Summit	80	IBHF-80-4(90)160	Bridge; County Road over I-80 1.9 Miles East of Wanship	Bridge - Rehabilitation #C-437	\$500,000.00	Bridge On System State	3448	50901	*106	x	x	x		x			
2	Summit	80	IBHF-80-4(90)160	Bridge; County Road over I-80 1.9 Miles East of Wanship	Bridge - Rehabilitation #C-437	\$1,000,000.00	Innovative Bridge	3448	50901	*106	x	x	x		x			
2	Summit	80	IBHF-80-4(88)154	Bridge; I-80 .6 Miles East of Wanship	Bridge - Rehabilitation #D-678	\$3,400,000.00	Bridge On System State	3679	50858	402	x	x	x		x			
2	Summit	35	STP-0035(2)0	SR-35; Francis to Diamond Bar Ranch	Road - Asphalt Pavement Reconstruction	\$2,210,000.00	Non Urban State	3446	50900	104	x			x				
2	Summit	32	STP-0032( )21	SR-32; Peoa to Wanship, Summit County	Road - Rotomill & Overlay	\$2,300,000.00	Non Urban State	3681	50859	334	x			x				
2	Summit	Var	IBHF-9999( )	Bridge; Various Locations on I-80 & I-84	Bridge - Rehabilitation #C-474,F-81,D-743,C-475,D-783	\$4,000,000.00	Bridge On System State	3450		87	x	x	x		x			
2	Summit	302	BRF-0302( )0	Bridge; SR-302 over Weber River at Entrance to Rockport SP	Bridge - Replacement #C-191	\$1,000,000.00	Bridge Optional State	3027		163	x	x	x		x			
2	Tooele	2684	STP-2684(2)1	Tooele Bvd; North; 600 North to SR-12 Phase One Construction	Road - New Construction	\$1,072,616.00	Any Area - Small Urban	632	05286	*24	x	x	x	x	x		x	
2	Tooele	2684	STP-2684(1)1	Tooele Bvd; South from SR-12 Phase One P.E.	Road - New Construction	\$718,653.00	Any Area - Small Urban	632	05286	*24	x	x	x	x	x		x	
2	Tooele	321	IRR-321	SVIR 101(3), Uintah / Ouray Skull Valley	Road - Overlay	\$482,000.00	Indian Reservation Roads			451	x			x				
2	Tooele	36	SP-0036(14)56	SR-36; Tooele to Mills Jct, Tooele Co	Road - Widen to Four Lanes	\$20,000,000.00	Centennial Highway	1847	78006	*31	x	x	x	x	x		x	
2	Tooele	36	HPP-0036(6)56	SR-36; Mills Junction to I-80, Tooele Co	Road - Widen to Four Lanes	\$384,750.00	High Priority Projects	838	05926	105	x	x	x	x	x		x	
2	Tooele	80	IM-80-2(49)40	I-80; Milepost 40 to Milepost 60	Road - Rotomill & Overlay	\$8,000,000.00	Interstate Maintenance	3664	50857	337	x			x				
2	Tooele	36	SP-0036(14)56	SR-36; Tooele to Mills Jct, Tooele Co	Road - Widen to Four Lanes	\$13,000,000.00	Centennial Highway	1847	78006	*31	x	x	x	x	x		x	
2	Tooele	80	IBHF-80-1( )71	Bridge; I-80 West Bound East of Dell	Bridge - Rehabilitation #C-238	\$600,000.00	Bridge On System State	3452		109	x	x	x		x			
2	Tooele	36	STP-0036( )30	SR-36; Tooele Valley Road, Bird Refuge to SR-199	Road - Asphalt Pavement Overlay	\$2,000,000.00	Any Area - Statewide	3769		286	x			x				
2	Tooele		STP-	Drubey Road	Road - Asphalt Pavement Reconstruction	\$1,072,616.00	Any Area - Small Urban			230	x			x				

Region	County	Route_no	Proj_no	Proj_lo	Proj_con	Cost	Fd_Srce	PIN_no	CID_no	Ref_no	Potential ATMS Deployments							
											Comm. Infrastructure	CCTV	VMS	TMS	ESS / RWIS	HAR	Signals	Ramp Meter
2	Tooele	LC45	STP-LC45( )	Grantsville Bypass; SR-112 to Burmester Road	Road - Asphalt Pavement Rehabilitation	\$1,072,616.00	Any Area - Small Urban			310	X			X				
2	Tooele	80	IM-80-1( )10	I-80; Milepost 10 to Milepost 20	Road - Rotomill & Overlay	\$14,000,000.00	Interstate Maintenance	3757		333	X			X				
2	Various	Var	SP-	Region 2 Contingency Funds	Actions by Region Director	\$750,000.00	State Construction			70	X	X	X	X	X	X	X	X
2	Various	Var	SP-	Region 2 Contingency Funds	Actions by Region Director	\$750,000.00	State Construction			361	X	X	X	X	X	X	X	X
2	Various	Var	SP-	Region 2 Contingency Funds	Actions by Region Director	\$750,000.00	State Construction			362	X	X	X	X	X	X	X	X
3	Daggett	1364	HPP-1364(2)15	Brown's Park Road, Daggett Co	Road - Asphalt Pavement New Construction	\$145,350.00	High Priority Projects	614	50287	*45	X			X				
3	Daggett	1364	STP-1364(2)15	Brown's Park Road; MP 15 to 20, Daggett Co	Road - Asphalt Pavement New Construction	\$472,616.00	Non Urban Local	614	50287	*45	X			X				
3	Daggett	191	BHF-0191( )241	US-191; Cart Creek Arch, Flaming Gorge	Bridge - Rehabilitation #C-372	\$1,000,000.00	Bridge On System State	3356		122	X	X	X		X			
3	Daggett	1364	STP-1364(2)15	Brown's Park Road; MP 15 to 20, Daggett Co	Road - Asphalt Pavement New Construction	\$1,072,616.00	Non Urban Local	614	50287	*45	X			X				
3	Duchesne	LC13	BHO-LC13(4)	Duchesne River Bridge Rehabilitation in Bridge land	Bridge - Rehabilitation #013058C	\$250,000.00	Bridge Off System Local	3320	50746	110	X	X	X		X			
3	Duchesne	LC13	BRO-LC13(5)	Lake Fork Creek, 4 Miles North West of Myton	Bridge - Replacement #013055C	\$625,000.00	Bridge Off System Local	3322	50747	112	X	X	X		X			
3	Duchesne	40	BRF-0040(30)99	Bridge; US-40 over Antelope Ck, 10.7 mi E of Duchesne	Bridge - Replacement #D-560	\$2,000,000.00	Bridge On System State	2220	50443	*46	X	X	X		X			
3	Duchesne	1544	STP-1544(1)5	Arcadia Road, Duchesne Co	Road - Asphalt Pavement Reconstruction	\$1,608,924.00	Non Urban Local	616	50162	202	X			X				
3	Duchesne	40	NH-0040(30)99	US-40; Antelope Creek to 7000 West, Duchesne Co	Road - Asphalt Pavement Rehabilitation	\$3,400,000.00	National Highway System	3515	50816	*46	X			X				
3	Duchesne	40	NH-0040(40)86	US-40; Strawberry River Bridge to Antelope Creek	Road - Asphalt Pavement Rehabilitation	\$2,729,000.00	National Highway System	3346	50765	115	X			X				
3	Duchesne	40	BHF-0040( )83	Bridge; US-40 over Starvation Reservoir	Bridge - Rehabilitation #C-560	\$3,500,000.00	Bridge On System State	3358		123	X	X	X		X			
3	Duchesne	40	NH-0040( )111	US-40; West Roosevelt to Ioka junction	Road - Widen to Three Lanes	\$2,500,000.00	National Highway System	3360	70248	124	X	X	X	X	X		X	
3	Juab	1826	STP-1826(1)0	Old Hwy 91; Mona to N Juab County Line	Road - Asphalt Pavement Reconstruction	\$2,145,232.00	Non Urban Local	2684	50533	203	X			X				
3	Juab	15	INH-15-5(29)206	Mills Rest Area; I-15	Rest Area - New Construction	\$1,900,000.00	National Highway System	1317	05324	166		X	X	X	X	X		
3	Juab	15	IM-15-4( )195	I-15; Millard / Juab County Line to Sevier	Road - Concrete Pavement Rehabilitation	\$25,000,000.00	Interstate Maintenance	3727		289	X			X				
3	Juab	15	IM-15-5 ( )223	I-15; South Nephi to North Nephi	Road - Concrete Pavement Rehabilitation	\$8,000,000.00	Interstate Maintenance	3725		294	X			X				
3	Uintah	LC47	BRO-LC47(2)	Bridge; City Rd over Ashley Ck at 1500 S 3400 E, Naples	Bridge - Replacement #047009A1	\$581,250.00	Bridge Off System Local	374	05363	205	X	X	X		X			
3	Uintah	LC47	BHO-LC47(7)	Bridge; Ashley Creek Bridges; Massey Bridge	Bridge - Replacement #047041C1	\$360,000.00	Bridge Off System Local	3296	50273	206	X	X	X		X			
3	Uintah	LC47	BRO-LC47(6)	Bridge; Mt Fuel Bridge over White River, 12.5 mi SE of Ouray	Bridge - Replacement #047046A1	\$1,000,000.00	Bridge Off System Local	3091	50660	217	X	X	X		X			
3	Uintah	40	STP-0040(35)150	US-40; Naples one mile Easterly	Road - Widen Shoulders	\$2,000,000.00	Non Urban State	2226	50610	210	X	X	X	X	X			
3	Uintah	191	BRF-0191(18)202	Bridge; US-191 Over Ashley Creek North of Vernal	Bridge - Replacement #D-739	\$1,250,000.00	Bridge On System State	3352	50768	119	X	X	X		X			
3	Uintah	2794	STP-2794(1)0	500 West; 500 S to 1500 S & 500 S., SR-40 to Vernal Ave.	Road - Asphalt Pavement Reconstruction	\$965,355.00	Any Area - Small Urban	3402	50770	224	X			X				
3	Uintah	191	STP-0191(22)212	US-191;Stauffer Chemical Plant Entrance to Red Cloud Loop Rd.	Road - Asphalt Pavement Rehabilitation	\$2,179,000.00	Any Area - Statewide	3354	50769	120	X			X				
3	Uintah	40	NH-0040(42)149	SR-40; Naples to Jensen	Road - Rotomill & Overlay	\$1,800,000.00	National Highway System	3701	50860	321	X			X				

Region	County	Route_no	Proj_no	Proj_lo	Proj_con	Cost	Fd_Srce	PIN_no	CID_no	Ref_no	Potential ATMS Deployments							
											Comm. Infrastructure	CCTV	VMS	TMS	ESS / RWIS	HAR	Signals	Ramp Meter
3	Uintah	40	NH-0040(44)130	SR-40; Ouray Junction to End of Twist	Road - Rotomill & Overlay	\$2,400,000.00	National Highway System	3705	50862	322	x			x				
3	Uintah	40	NH-0040(43)115	SR-40; Roosevelt to Ouray Junction	Road - Rotomill & Overlay	\$4,500,000.00	National Highway System	3703	50861	323	x			x				
3	Uintah	LC47	STP-LC47( )	500 North; 500 West to Vernal Avenue	Road - Asphalt Pavement Reconstruction	\$804,462.00	Any Area - Small Urban			308	x			x				
3	Utah	LC49	BRO-LC49(35)	Bridge; Provo Center St., Provo River Bridge at Ent Utah Lake SP	Bridge - Replacement #049009C1	\$700,000.00	Bridge Off System Local	2295	50275	191	x	x	x		x			
3	Utah	LC49	BRO-LC49(27)	Bridge; Powerhouse Road over Sp Fk River, SE of Sp Fk	Bridge - Replacement #049042C1	\$1,375,000.00	Bridge Off System Local	1728	50164	190	x	x	x		x			
3	Utah	LC49	BRO-LC49(62)	Bridge; 6250 (UC) Highline Canal Bridge, Santaquin	Bridge - Replacement #049052	\$250,000.00	Bridge Off System Local	3324	50748	113	x	x	x		x			
3	Utah	114	BRF-0114(4)2	Bridge; Geneva Rd SR-114 over Provo River in W Provo	Bridge - Replacement #C-199	\$1,000,000.00	Bridge On System State	2934	50612	211	x	x	x		x			
3	Utah	15	HPP-15-6(135)266	University Ave Interchange (phase 2), Provo	Convert Advance Construction	\$1,710,000.00	High Priority Projects	2192	78008	409	x	x	x	x	x	x	x	x
3	Utah	89	STP-0089(40)298	Intersection; 1600 North & State St, Orem	Intersection - Additional Turning Lanes	\$119,060.00	Provo/Orem Urban Area	2327	50328	*222	x	x	x	x			x	
3	Utah		CM-	ITS; Provo Traffic Lights 7 Locations	Intersection - Signal Modernization	\$137,104.00	CMAQ (MAG Area)	2552		432	x	x	x	x			x	
3	Utah	LC49	STP-LC49( )	ITS: Utah Valley Commuter Link	ITS - Implement Deployment Plan	\$268,154.00	Any Area - Spanish Fork			*44	x	x	x	x	x	x	x	x
3	Utah	LC49	STP-LC49( )	ITS: Utah Valley Commuter Link	ITS - Implement Deployment Plan	\$268,154.00	Provo/Orem Urban Area			*44	x	x	x	x	x	x	x	x
3	Utah	LC49	CM-LC49(31)	ITS; Provo Area Fiber Optic Signal & Wan	ITS/ATMS - Traffic System Management	\$858,093.00	CMAQ (MAG Area)	2297	50228	*41	x	x	x	x			x	
3	Utah	LC49	CM-LC49(42)	Park & Ride; I-15/American Fork Main St Interchange	Park & Ride Lot - Expansion	\$86,578.00	CMAQ (MAG Area)	2546	50438	*200	x	x	x	x			x	
3	Utah	LC49	STP-LC49(42)	Park & Ride; I-15/American Fork Main St Interchange	Park & Ride Lot - Expansion	\$203,797.00	Provo/Orem Urban Area	2546	50438	*200	x	x	x	x			x	
3	Utah	LC49	CM-LC49(28)	Park & Ride; I-15/PG Interchange, American Fork	Park & Ride Lot Construction	\$198,434.00	CMAQ (MAG Area)	2194	50221	*184	x	x	x	x			x	
3	Utah	147	STP-0147(7)16	RR Crossing; 400 North 1200 East, Spanish Fork	Railroad Crossing - Improvement #254405E	\$268,154.00	Railroad Crossings	3394	50760	213	x							
3	Utah	LC49	STP-LC49(66)	RR Crossing; 6400 South 2000 East, Mapleton	Railroad Crossing - Improvement #254744J	\$5,363.00	Railroad Crossings	3400	50763	215	x							
3	Utah	LC49	STP-LC49(65)	RR Crossing; 6800 South 2200 East, Mapleton	Railroad Crossing - Improvement #254745R	\$268,154.00	Railroad Crossings	3398	50762	216	x							
3	Utah	LC49	STP-LC49(64)	RR Crossing; 7200 South 2400 East, Mapleton	Railroad Crossing - Improvement #254746X	\$5,363.00	Railroad Crossings	3396	50761	214	x							
3	Utah	52	SP-0052(1)0	800 North, Orem; Geneva Rd (SR 114) to SR-189**	Road - Interchange & Intersection Improvement	\$2,500,000.00	Centennial Highway	2598	78047	*47	x	x	x	x	x		x	
3	Utah	3006	STP-3006(2)0	820 North; 1350 West to Geneva Road, Provo**	Road - Widen / Shoulders Turn Lanes	\$100,000.00	Provo/Orem Urban Area	3472	50225	*188	x	x	x	x	x		x	
3	Utah	LC49	BRO-LC49(63)	Bridge; Canyon Rd Highline Canal Bridge, Payson	Bridge - Replacement # 049049C1	\$375,000.00	Bridge Off System Local	3775	50891	325	x	x	x		x			
3	Utah	LC49	BRO-LC49(70)	Bridge; 600 East Highline Canal Bridge, Payson	Bridge - Replacement # 049051C1	\$437,500.00	Bridge Off System Local	3777	50892	317	x	x	x		x			
3	Utah	6	BRF-0006(17)190	Bridge; SR-6 Over UPRR Spanish Fork Cyn (near Soldier Creek)	Bridge - Replacement #C-287	\$2,500,000.00	Bridge On System State	3348	50766	117	x	x	x		x			
3	Utah	89	STP-0089(40)298	Intersection; 1600 North & State St, Orem	Intersection - Additional Turning Lanes	\$727,641.00	Provo/Orem Urban Area	2327	50328	*222	x	x	x	x			x	
3	Utah	LC49	STP-LC49( )	ITS: Utah Valley Commuter Link	ITS - Implement Deployment Plan	\$246,702.00	Any Area - Spanish Fork			*44	x	x	x	x	x	x	x	x



Region	County	Route_no	Proj_no	Proj_lo	Proj_con	Cost	Fd_Srce	PIN_no	CID_no	Ref_no	Potential ATMS Deployments							
											Comm. Infrastructure	CCTV	VMS	TMS	ESS / RWIS	HAR	Signals	Ramp Meter
3	Utah	LC49	STP-LC49( )	ITS: Utah Valley Commuter Link	ITS - Implement Deployment Plan	\$289,606.00	Provo/Orem Urban Area			*44	x	x	x	x	x	x	x	x
3	Utah	LC49	CM-LC49(31)	ITS: Provo Area Fiber Optic Signal & Wan	ITS/ATMS - Commuter Link	\$935,322.00	CMAQ (MAG Area)	2297	50228	*41	x	x	x	x			x	
3	Utah	LC49	CM-LC49(28)	Park & Ride; I-15/PG Interchange, American Fork	Park & Ride Lot Construction	\$643,570.00	CMAQ (MAG Area)	2194	50221	*184	x	x	x	x			x	
3	Utah	114	STP-0114(2)6	RR Crossing; Geneva Road & 300 South, Orem	Railroad Crossing - Improvement #254904V	\$536,308.00	Railroad Crossings	221	05639	168	x							
3	Utah	15	IM-15-6(140)286	I-15; North Lehi Interchange to Utah County Line	Road - Concrete Pavement Rehabilitation	\$5,000,000.00	Interstate Maintenance	3049	50776	220	x			x				
3	Utah	52	SP-0052(1)0	800 North, Orem; Geneva Rd (SR 114) to SR-189**	Road - Interchange & Intersection Improvement	\$14,500,000.00	Centennial Highway	2598	78047	*47	x	x	x	x	x		x	
3	Utah	6	SP-0006(41)169	US-6; US-89 Spanish Fork to Price	Road - Safety Improvements	\$10,326,000.00	Centennial Highway	2600	78048	*52	x	x	x	x	x		x	
3	Utah	2932	STP-2932(1)0	1200 East; State Rd US-89 to SR-92, Lehi**	Road - Widen Shoulders / Turn Lane	\$1,660,509.00	Provo/Orem Urban Area	2076	50222	*39	x	x	x	x	x		x	
3	Utah	2860	STP-2860(1)0	700 North; Main St to 900 East, Payson	Road - Widen Shoulders/Turn Lane	\$1,800,000.00	Any Area - Small Urban	847	50777	221	x	x	x	x			x	
3	Utah	6	BRF-0006(25)159	Bridge; US-6 over UPRR west of Santaquin	Bridge - Replacement #C-381	\$2,000,000.00	Bridge On System State	3362	50902	128	x	x	x		x			
3	Utah	LC49	STP-LC49( )	ITS: Utah Valley Commuter Link	ITS - Implement Deployment Plan	\$268,154.00	Any Area - Spanish Fork			*44	x	x	x	x	x	x	x	x
3	Utah	LC49	STP-LC49( )	ITS: Utah Valley Commuter Link	ITS - Implement Deployment Plan	\$268,154.00	Provo/Orem Urban Area			*44	x	x	x	x	x	x	x	x
3	Utah	LC49	STP-LC49(48)	ITS: American Fork Signal Coordination	ITS - Signal Coordination	\$573,032.00	CMAQ (MAG Area)	2544	50508	197	x	x	x	x			x	
3	Utah		STP-	900 E Center; 2230 N Provo Cyn Rd; 900 E Univ. Prkwy; Provo	ITS; Signal Modernization	\$112,625.00	Provo/Orem Urban Area			*136	x	x	x	x			x	
3	Utah	6	SP-0006(41)169	US-6; US-89 Spanish Fork to Price	Road - Safety Improvements	\$4,574,000.00	Centennial Highway	2600	78048	*52	x	x	x	x	x		x	
3	Utah	52	SP-0052(1)0	800 North, Orem; Geneva Rd (SR 114) to SR-189**	Road - Widen and Interchange Reconstruct	\$18,662,000.00	Centennial Highway	2598	78047	*47	x	x	x	x	x		x	
3	Utah	2975	STP-2975( )	Sandhill Road; University Parkway to 2000 South, Orem	Road - Widen Shoulders Turning Lanes, PE	\$281,025.00	Provo/Orem Urban Area			*141	x	x	x	x			x	
3	Utah	114	BRF-0114( )1	Bridge; Provo Center St over UPRR & 1200 W St, Provo	Bridge - Replacement #D-413	\$3,000,000.00	Bridge On System State	1742		219	x	x	x		x			
3	Utah	15	IM-BRF-15-6(134)264	Interchange; I-15 /1400 North SR-75, Springville**	Interchange & Bridge - Replacement #F-110	\$6,000,000.00	Bridge On System State	1736	50256	*38	x	x	x	x	x	x	x	x
3	Utah	15	IM-BRF-15-6(134)264	Interchange; I-15 /1400 North SR-75, Springville**	Interchange & Bridge - Replacement #F-110	\$5,000,000.00	Interstate Maintenance	1736	50256	*38	x	x	x	x	x	x	x	x
3	Utah	LC49	CM-LC49( )	Transit; Provo Intermodal Center 600 South & Freedom Blvd.	Intermodal Center Construction	\$1,067,822.00	Provo/Orem Urban Area			*51	x	x	x	x			x	
3	Utah		STP-	900 E Center; 2230 N Provo Cyn Rd; 900 E Univ. Prkwy; Provo	ITA; Signal Modernization	\$690,415.00	Provo/Orem Urban Area			*136	x	x	x	x			x	
3	Utah	LC49	STP-LC49( )	ITS: Utah Valley Commuter Link	ITS - Implement Deployment Plan	\$268,154.00	Any Area - Spanish Fork			*44	x	x	x	x	x	x	x	x
3	Utah	LC49	STP-LC49( )	ITS: Utah Valley Commuter Link	ITS - Implement Deployment Plan	\$268,154.00	CMAQ (MAG Area)			*44	x	x	x	x	x	x	x	x
3	Utah		CM-	Provo City CCTV Surveillance / Video Detection	ITS - Traffic Management System	\$850,000.00	CMAQ (MAG Area)			135	x	x		x			x	
3	Utah	LC49	STP-LC49(34)	Park & Ride; Downtown Pleasant Grove	Park & Ride Lot New Construction	\$689,000.00	Provo/Orem Urban Area	2922	50605	198	x	x	x	x			x	

Region	County	Route_no	Proj_no	Proj_lo	Proj_con	Cost	Fd_Srce	PIN_no	CID_no	Ref_no	Potential ATMS Deployments							
											Comm. Infrastructure	CCTV	VMS	TMS	ESS / RWIS	HAR	Signals	Ramp Meter
3	Utah	2860	STP-2860( )0	700 South (Cyn Rd) SR-198 to Nebo Loop Road; Payson City	Road - Asphalt Pavement Reconstruction	\$858,093.00	Any Area - Small Urban			229	x			x				
3	Utah	115	STP-0115( )0	SR-115; Payson Main Street	Road - Asphalt Pavement Reconstruction	\$2,500,000.00	Any Area - Statewide	3735		291	x			x				
3	Utah	6	NH-0006( )176	US-6; Lower Spanish Fork Canyon and the (Red Narrows)	Road - Asphalt Pavement Reconstruction	\$5,000,000.00	National Highway System	3729		292	x			x				
3	Utah	2872	STP-2872(2)7	Woodland Hills Drive, SR-198 to Arrowhead Trail; Salem**	Road - New Construction Three Lanes	\$2,145,232.00	Non Urban Local	3773	50890	*302	x	x	x	x	x		x	
3	Utah	LC49	STP-LC49( )	2000 West Pleasant Grove or 700 North Lindon**	Road - New construction Widen to Five Lanes	\$2,000,000.00	Provo/Orem Urban Area			407	x	x	x	x	x		x	
3	Utah		STP-	50 South American Fork 700 East to Mt. Timpanogos Pkwy	Road - Shoulders/Turn Lane	\$530,000.00	Provo/Orem Urban Area			137	x	x	x	x	x		x	
3	Utah		STP-	1200 West; I-15 to 2600 North, Lehi	Road - Shoulders/Turn Lane	\$800,000.00	Provo/Orem Urban Area			139	x	x	x	x	x		x	
3	Utah	3006	STP-3006(2)0	820 North; 1350 West to Geneva Road, Provo**	Road - Widen / Shoulders Turn Lanes	\$1,361,007.00	Provo/Orem Urban Area	3472	50225	*188	x	x	x	x	x		x	
3	Utah	2975	STP-2975( )	Sandhill Road; University Parkway to 2000 South, Orem	Road - Widen Shoulders Turning Lanes	\$1,718,975.00	Provo/Orem Urban Area			*141	x	x	x	x			x	
3	Utah	114	STP-0114(5)1	Geneva Road; I-15 to SR-89, Orem	Road - Widen to Five Lanes	\$10,000,000.00	Any Area - Statewide	2228	50613	*50	x	x	x	x			x	
3	Utah	89	NH-0089( )300	State St / US-89; 200 South Lindon to 500 East American Fork	Road - Widen to Seven Lanes	\$11,000,000.00	National Highway System	3733		290	x	x	x	x	x		x	
3	Utah	198	STP-0198(3)166	SR-198; Payson to Spanish Fork, Phase Two**	Road - Widen to Three Lanes	\$1,900,000.00	Any Area - Statewide	3471	50788	434	x	x	x	x	x		x	
3	Various	Var	SP-	Region 3 Contingency Funds	Actions by Region Director	\$750,000.00	State Construction			182	x	x	x	x	x	x	x	x
3	Various	Var	SP-	Region 3 Contingency Funds	Actions by Region Director	\$750,000.00	State Construction			282	x	x	x	x	x	x	x	x
3	Various	Var	SP-	Region 3 Contingency Funds	Actions by Region Director	\$750,000.00	State Construction			365	x	x	x	x	x	x	x	x
3	Wasatch	40	NH-0040(36)13	Interchange; Midway & US-40	Interchange - New Construction	\$15,000,000.00	National Highway System	1337	50614	212	x	x	x	x	x	x	x	x
3	Wasatch	3130	SP-3130(1)0	Midway City; Wasatch Mountain State Park Access Road	Road - Asphalt Pavement Reconstruction	\$170,000.00	State Park Roads	2052	70078	*48	x			x				
3	Wasatch	189	SP-0189(6)14	Provo Canyon; Wildwood to Deer Creek Reservoir	Road - New Construction	\$20,000,000.00	Centennial Highway	3487	78085	*49	x	x	x	x	x		x	
3	Wasatch	3130	SP-3130(1)0	Burgi Lane; Wasatch Mountain State Park Access Road	Road - Asphalt Pavement Reconstruction	\$287,000.00	State Park Roads	2052	70078	*48	x			x				
3	Wasatch	189	SP-0189(6)14	Provo Canyon; Wildwood to Deer Creek Reservoir	Road - New Construction	\$23,900,000.00	Centennial Highway	3487	78085	*49	x	x	x	x	x		x	
3	Wasatch	189	NH-0189( )21	SR-189; Wallsburg to Heber	Road - Asphalt Pavement Rehabilitation	\$2,500,000.00	National Highway System	3364		130	x			x				
3	Wasatch	189	NH-0189(12)14	Provo Canyon; Wildwood to Deer Creek Reservoir	Road - New Construction	\$15,000,000.00	National Highway System	3487	50801	*49	x	x	x	x	x		x	
4	Beaver	LC01	BRO-LC01(2)	Bridge; Minersville Fair Ground Road	Bridge - Repair #001007D1	\$500,000.00	Bridge Off System Local	2947	50623	248	x	x	x		x			
4	Beaver	15	IM-NH-15-3(26)121	I-15; Wildcat Interchange to Jct I-70	Road - Asphalt Pavement Rehabilitation	\$16,200,000.00	National Highway System	2622	50465	247	x			x				
4	Carbon	6	BHF-0006(23)220	SR-6; Over Railroad Near the Price Port of Entry	Bridge - Rehabilitation #C-312	\$1,000,000.00	Bridge On System State	3707	50863	404	x	x	x		x			
4	Carbon	6	SP-0006(30)215	US-6; Soldier Summit to Helper	Road - Widen / Add Passing Lanes	\$5,500,000.00	Centennial Highway	1970	78026	*59	x	x	x	x	x	x		
4	Carbon	6	SP-0006(29)229	US-6; Price to Green River	Road - Widen to Four Lanes	\$3,270,000.00	Centennial Highway	1968	78025	254	x	x	x	x	x	x	x	
4	Carbon	6	SP-0006(30)215	US-6; Soldier Summit to Helper	Road - Widen / Add Passing Lanes	\$6,500,000.00	Centennial Highway	1970	78026	*59	x	x	x	x	x	x		

Region	County	Route_no	Proj_no	Proj_lo	Proj_con	Cost	Fd_Srce	PIN_no	CID_no	Ref_no	Potential ATMS Deployments							
											Comm. Infrastructure	CCTV	VMS	TMS	ESS / RWIS	HAR	Signals	Ramp Meter
4	Carbon		STP-	Homestead Blvd. (Cedar Hills Dr. to Homestead Loop)	Road - Asphalt Pavement Reconstruction	\$1,072,616.00	Any Area - Small Urban			226	x			x				
4	Carbon	6	SP-0006(30)215	US-6; Soldier Summit to Helper	Road - Widen / Add Passing Lanes	\$5,100,000.00	Centennial Highway	1970	78026	*59	x	x	x	x	x	x		
4	Carbon	6	NH-0006(1)216	US-6; Scofield Junction to Pine Tree Park	Road - Widen to Four Lanes	\$13,169,550.00	National Highway System	65	05515	263	x	x	x	x	x	x	x	
4	Carbon	6	NH-0006(11)185	Tucker Rest Area; US-6	Rest Area - Modifications	\$1,500,000.00	National Highway System	1730	50387	268		x	x	x	x	x		
4	Carbon	6	SP-0006(30)215	US-6; Soldier Summit to Helper	Road - Widen / Add Passing Lanes	\$7,925,000.00	Centennial Highway	1970	78026	*59	x	x	x	x	x	x		
4	Carbon	6	NH-0006( )246	US-6; Cat Canyon to Grassy Trail Creek, Price	Road - Widen / Add Passing Lanes	\$2,000,000.00	National Highway System	3404		171	x	x	x	x	x	x		
4	Emery	1650	SP-1650(1)0	Goblin Valley State Park Access Road, Emery Co	Road - Asphalt Pavement New Construction	\$391,000.00	State Park Roads	1874	70057	*54	x			x				
4	Emery	1612	STP-1612(1)0	South More Cutoff, Emery Co	Road - Asphalt Pavement Reconstruction	\$2,145,232.00	Non Urban Local	2260	50555	249	x			x				
4	Emery	10	SP-0010(9)0	SR-10; Price to I-70	Road - Widen / Add Passing Lanes	\$3,258,000.00	Centennial Highway	1974	78028	255	x	x	x	x	x	x		
4	Emery	6	SP-0006(29)229	US-6; Price to Green River	Road - Widen to Four Lanes	\$3,270,000.00	Centennial Highway	1968	78025	254	x	x	x	x	x	x	x	
4	Emery	10	BHF-0010(27)16	Bridge; SR-10, North of Emery	Bridge - Replacement #D-462	\$900,000.00	Bridge On System State	3406	50773	167	x	x	x		x			
4	Emery	6	BHF-0006(24)277	SR-6; Bridge over UPRR	Bridge - Rehabilitation #F-256	\$750,000.00	Bridge On System State	3412	50864	172	x	x	x		x			
4	Emery	1650	SP-1650(1)0	Goblin Valley State Park Access Road, Emery Co	Road - Asphalt Pavement New Construction	\$250,000.00	State Park Roads	1874	70057	*54	x			x				
4	Garfield	20	SP-0020(1)0	SR-20; I-15 to US-89	Road - Widen / Add Passing Lanes	\$9,000,000.00	Centennial Highway	1837	78001	256	x	x	x	x	x	x		
4	Garfield	LC17	STP-LC17(7)	Red Canyon Welcome Center, Garfield Co	Welcome Center - New Construction	\$602,200.00	Transportation Enhancement	2956	50629	424		x	x	x	x	x		
4	Garfield	12	STP-0012( )85	Boulder Rest Area; SR-12	Rest Area - New Construction	\$700,000.00	Any Area - Statewide	1341		174		x	x	x	x	x		
4	Garfield	12	STP-0012( )70	SR-12;Head of Rock View Area to New Home Bench	Road - Asphalt Pavement Rehabilitation	\$5,500,000.00	Any Area - Statewide	3414		173	x			x				
4	Grand	191	PLH-40	Arches National Park Main Entrance Relocation	Road - New Construction	\$2,900,000.00	Public Land Highway			228	x	x	x	x	x		x	
4	Grand	191	SP-0191(30)125	US-191; Moab to I-70 at Crescent Junction	Road - Widen to Four Lanes	\$4,000,000.00	Centennial Highway	2092	78037	*62	x	x	x	x	x	x	x	
4	Grand	LC19	BRO-LC19( )	Thompson Wash on County Road 175, West of Thompson	Bridge - Replacement #019019C	\$637,500.00	Bridge Off System Local			318	x	x	x		x			
4	Grand	191	SP-0191(30)125	US-191; Moab to I-70 at Crescent Junction	Road - Widen to Four Lanes	\$13,041,000.00	Centennial Highway	2092	78037	*62	x	x	x	x	x	x	x	
4	Grand	128	BRF-0128(5)12	Bridge; 14.4 Miles North of Moab	Bridge - Replacement #C-179	\$500,000.00	Bridge On System State	3416	50865	175	x	x	x		x			
4	Grand	191	BRF-0191(23)128	Colorado River Bridge Study	Bridge - Study #C-285	\$400,000.00	Bridge Off System Local	3418	50866	176	x	x	x		x			
4	Grand	191	NH-0191(25)124	US-191;Moab Main Street	Road - Asphalt Pavement Rehabilitation	\$6,000,000.00	National Highway System	3420	50903	177	x			x				
4	Grand	70	IM-70-4( )174	I-70; Floy Wash to Crescent Junction	Road - Asphalt Pavement Rehabilitation	\$8,400,000.00	Interstate Maintenance	2210	70113	264	x			x				
4	Iron	1770	STP-1770(2)1	Airport Road 400 North to Kitty Hawk 2400 North, Cedar City	Road - Asphalt Pavement Reconstruction	\$1,072,616.00	Any Area - Small Urban	3715	50895	227	x			x				
4	Iron	1756	STP-1756(1)0	Kanarraville to Iron Springs	Road - Asphalt Pavement Reconstruction	\$536,308.00	Non Urban Local	624	50455	234	x			x				
4	Iron	56	SP-0056(3)56	SR-56; I-15 to Iron Springs, Iron Co	Road - Widen to Four Lanes	\$4,621,000.00	Centennial Highway	1841	78003	246	x	x	x	x	x	x	x	
4	Iron	15	IBHF-15-2(43)62	Bridge;I-15 Over SR-130 Near Cedar City	Bridge - Rehabilitation #D-762	\$450,000.00	Bridge On System State	3408	50774	169	x	x	x		x			

Region	County	Route_no	Proj_no	Proj_lo	Proj_con	Cost	Fd_Srce	PIN_no	CID_no	Ref_no	Potential ATMS Deployments							
											Comm. Infrastructure	CCTV	VMS	TMS	ESS / RWIS	HAR	Signals	Ramp Meter
4	Iron	15	IM-15-2(45)82	I-15; Paragonah to SR-20 off Ramp	Road - Concrete Pavement Rehabilitation	\$7,800,000.00	Interstate Maintenance	3422	50904	178	x			x				
4	Iron	1774	STP-1774(1)1	Cross Hollow Road; I-15 to SR-56	Road - Asphalt Pavement Reconstruction	\$1,072,616.00	Any Area - Small Urban			319	x			x				
4	Kane	89	NH-BRF-0089(33)69	Bridge; US-89 over Kanab Ck, 4.1 mi N of Kanab	Bridge - Rehabilitation #C-306	\$2,000,000.00	Bridge On System State	1760	50261	*58	x	x	x		x			
4	Kane	89	NH-BRF-0089(33)69	Bridge; US-89 over Kanab Ck, 4.1 mi N of Kanab	Bridge - Rehabilitation #C-306	\$500,000.00	National Highway System	1760	50261	*58	x	x	x		x			
4	Kane	LC25	BRO-LC25(2)	Bridge; Kanab Ranchos Rd over Kanab Creek, S Kanab	Bridge - Replacement #025007V1	\$312,500.00	Bridge Off System Local	2614	50467	251	x	x	x		x			
4	Kane		SP-	Kodachrome State Park Access Road, Cannonville Town	Road - Asphalt Pavement Reconstruction	\$80,000.00	State Park Roads			*60	x			x				
4	Kane	89	NH-0089(44)82	Mt Carmel Junction Rest Area; US-89	Rest Area - New Construction	\$1,600,000.00	National Highway System	1758	50389	265		x	x	x	x	x		
4	Kane	89	NH-0089( )65	US-89; 100 North in Kanab to Hog Canyon Bridge	Road - Asphalt Pavement Rehabilitation	\$2,500,000.00	National Highway System	3424		179	x			x				
4	Millard	15	INH-15-4( )180	Kanosh Rest Area; I-15	Rest Area - New Construction	\$1,800,000.00	National Highway System	548	70046	266		x	x	x	x	x		
4	San Juan	191	SP-0191(28)52	US-191; Blanding to Moab	Road - Widen / Add Passing Lanes	\$5,000,000.00	Centennial Highway	1976	70112	*63	x	x	x	x	x	x		
4	San Juan	191	NH-0191(11)0	Monument Valley Welcome Center	Welcome Center - New Construction	\$500,000.00	National Highway System	1353	50359	259		x	x	x	x	x		
4	San Juan	0016	N33410	Utah St; MP 48.7 to Rainbow Lodge MP 55	Road - Asphalt Pavement Reconstruction	\$8,227,000.00	Indian Reservation Roads			*55	x			x				
4	San Juan	16	IRR-410( )	San Juan Western Navajo Rt 16 in San Juan County	Road - Construction	\$8,245,000.00	Indian 1214D Road Fund			371	x	x	x	x	x	x	x	
4	San Juan	191	SP-0191(28)52	US-191; Blanding to Moab	Road - Widen / Add Passing Lanes	\$4,588,000.00	Centennial Highway	1976	70112	*63	x	x	x	x	x	x		
4	San Juan	666	NH-0666(1)0	US-666; Monticello to Colorado State Line	Road - Asphalt Pavement Reconstruction	\$9,000,000.00	National Highway System	3063	50905	267	x			x				
4	San Juan	2430	STP-2430(1)0	Lisbon Valley Road, San Juan Co. Phase 1	Road - Asphalt Pavement Reconstruction	\$2,145,232.00	Non Urban Local	2938	50617	*56	x			x				
4	San Juan	2430	STP-2430(1)0	Lisbon Valley Road, San Juan Co. Phase 2	Road - Asphalt Pavement Reconstruction	\$2,145,232.00	Non Urban Local	2938	50617	*56	x			x				
4	Sevier	LC41	BRO-LC41(8)	Bridge; City Rd over Sevier Riv, 1 mi E of Rdmd & 3.5 mi W of Aur	Bridge - Replacement #041030A1 & 24A1	\$750,000.00	Bridge Off System Local	2686	50538	252	x	x	x		x			
4	Sevier	2536	STP-2536(1)0	Richfield to Annabella Road	Road - Asphalt Pavement Reconstruction	\$2,145,232.00	Non Urban Local	3372	50772	*37	x			x				
4	Sevier		SP-	Fremont Indian State Park Access Road, Sevier Co	Road - Asphalt Pavement Reconstruction	\$250,000.00	State Park Roads			271	x			x				
4	Sevier	70	IM-70-2(37)83	I-70; Wide Hollow to Fremont Junction	Road - Asphalt Pavement Rehabilitation	\$10,000,000.00	Interstate Maintenance	2772	50628	260	x			x				
4	Sevier	LC41	STP-LC41( )	500 North Main Street to 400 West	Road - Asphalt Pavement Reconstruction	\$858,093.00	Any Area - Small Urban			225	x			x				
4	Sevier	2554	PFH-39-1(1)16	FH-39; Seven Mile to Gooseberry, E of Salina, Phase 1	Road - Asphalt Pavement Reconstruction	\$8,000,000.00	Forest Highway	658		*57	x			x				
4	Various	Var	SP-	Region 4 Contingency Funds	Actions by Region Director	\$750,000.00	State Construction			233	x	x	x	x	x	x	x	
4	Various	Var	SP-	Region 4 Contingency Funds	Actions by Region Director	\$750,000.00	State Construction			366	x	x	x	x	x	x	x	
4	Various	Var	SP-	Region 4 Contingency Funds	Actions by Region Director	\$750,000.00	State Construction			369	x	x	x	x	x	x	x	
4	Washington	LC53	BRO-LC53(2)	Bridge; City St over Virgin River, NE of Hurricane	Bridge - Replacement #053013C1	\$625,000.00	Bridge Optional Local	402	05981	262	x	x	x		x			
4	Washington	15	SP-15-1(20)13	Interchange; S of Washington & I-15	Interchange - New Construction	\$12,903,000.00	Centennial Highway	2520	78045	250	x	x	x	x	x	x	x	

Region	County	Route_no	Proj_no	Proj_lo	Proj_con	Cost	Fd_Srce	PIN_no	CID_no	Ref_no	Potential ATMS Deployments							
											Comm. Infrastructure	CCTV	VMS	TMS	ESS / RWIS	HAR	Signals	Ramp Meter
4	Washington	15	HPP-15-1(56)1	I-15; Atkinville Interchange, Washington Co	Interchange - New Construction	\$1,368,000.00	High Priority Projects	2189	50335	240	x	x	x	x	x	x	x	
4	Washington	3190	STP-3190(1)0	Highland Drive; 1000 E to City Limits, St. George	Road - Asphalt Pavement Reconstruction	\$687,547.00	Any Area - Small Urban	2944	50621	244	x			x				
4	Washington	3154	STP-3154(2)0	Telegraph Road, Pine Wash to Landfill Road, Washington Co	Road - Asphalt Pavement Reconstruction	\$648,032.00	Non Urban Local	1509	50092	242	x			x				
4	Washington	18	BHF-0018(34)20	Bridge; SR-18 over Santa Clara River near Veyo	Bridge - Rehabilitation #C-293	\$1,200,000.00	Bridge On System State	3410	50775	170	x	x	x		x			
4	Washington	15	IBHF-15-1(60)5	Bridge; Various location along I-15, St. George & Cedar	Bridge - Rehabilitation #	\$1,500,000.00	Bridge On System State	3426	50867	180	x	x	x		x			
4	Washington	LC53	BRO-LC53(14)	Bridge; Virgin River South side of Rockville	Bridge - Replacement #053019C1	\$781,250.00	Bridge Off System Local			297	x	x	x		x			
4	Washington	34	STP-0034(4)0	St George Boulevard	Road - Asphalt Pavement Reconstruction	\$8,600,000.00	Any Area - Statewide	2212	50906	270	x			x				
4	Washington	9	BHF-0009( )32	Bridge; SR-9 Springdale	Bridge - Rehabilitation #F-82	\$1,000,000.00	Bridge On System State	3428		181	x	x	x		x			
4	Washington	LC53	STP-LC53( )	600 North From SR-9 to SR-9 in Hurricane	Road - Asphalt Pavement Reconstruction	\$1,072,616.00	Any Area - Small Urban			306	x			x				
4	Washington	LC53	STP-LC53( )	700 West; 400 South to 1300 South, Hurricane	Road - Asphalt Pavement Reconstruction	\$1,072,616.00	Any Area - Small Urban			307	x			x				
4	Washington	15	IM-15-1( )0	I-15; Arizona State Line to Middleton	Road - Asphalt Pavement Rehabilitation	\$7,500,000.00	Interstate Maintenance	3065		269	x			x				
4	Washington	LC53	STP-LC53( )	Southern Corridor Phase 2	Road - New Construction	\$2,136,600.00	Dixie Urbanized Area			*401	x	x	x	x	x		x	
4	Wayne	LC55	BRO-LC55(1)	Bridge; over Cainville Wash, Cainville	Bridge - Repair #055009A1	\$375,000.00	Bridge Off System Local	2949	50625	253	x	x	x		x			
4	Wayne	24	STP-0024(28)53	SR-24; South Lyman to 300 East, Bicknell	Road - Asphalt Pavement Reconstruction	\$8,034,000.00	Non Urban State	673	50907	261	x			x				
S	Statewide	Var	SP-	Program Development Contingency	Actions by Progmming Director	\$200,000.00	State Construction			349	x	x	x	x	x	x	x	x
S	Statewide	Var	SP-	Various Locations Statewide	Bridge - Preservation	\$7,900,000.00	State Construction			375	x	x	x		x			
S	Statewide	Var	STP-	Various Locations Statewide	Road - Asphalt Pavement Preservation	\$3,880,000.00	Any Area - Statewide			187	x			x				
S	Statewide	Var	IM-	Various Locations Statewide	Road - Asphalt Pavement Preservation	\$15,700,000.00	Interstate Maintenance			183	x			x				
S	Statewide	Var	NH-	Various Locations Statewide	Road - Asphalt Pavement Preservation	\$8,000,000.00	National Highway System			186	x			x				
S	Statewide	Var	SP-	Various Locations Statewide	Road - Asphalt Pavement Preservation	\$22,400,000.00	State Construction			374	x			x				
S	Statewide	Var	SP-	Traffic Signals Various Locations	Signal - New Construction	\$6,300,000.00	State Construction			394	x	x	x	x			x	
S	Statewide	Var	SP-	Sign Modifications & Replacement	Signing - Modifications & Replacement	\$400,000.00	State Construction			368			x					
S	Statewide	Var	SP-	Spot Improvements for Safety Various Locations	Spot Improvement - Various	\$2,600,000.00	State Construction			391	x	x	x	x	x	x	x	x
S	Statewide	Var	SP-	Program Development Contingency	Actions by Progmming Director	\$200,000.00	State Construction			350	x	x	x	x	x	x	x	x
S	Statewide	Var	SP-	Various Locations Statewide	Bridge - Preservation	\$10,000,000.00	State Construction			328	x	x	x		x			
S	Statewide	Var	BHF-	Statewide	Bridge Management & Inspection	\$1,000,000.00	Bridge On System State			278	x	x	x		x			
S	Statewide	Var	STP-9999( )	Various Locations Statewide	Road - Asphalt Pavement Preservation	\$9,800,000.00	Any Area - Statewide			201	x			x				
S	Statewide	Var	IM-	Various Locations Statewide	Road - Asphalt Pavement Preservation	\$14,400,000.00	Interstate Maintenance			192	x			x				
S	Statewide	Var	NH-	Various Locations Statewide	Road - Asphalt Pavement Preservation	\$2,600,000.00	National Highway System			195	x			x				
S	Statewide	Var	SP-	Various Locations Statewide	Road - Asphalt Pavement Preservation	\$23,400,000.00	State Construction			312	x			x				

Region	County	Route_no	Proj_no	Proj_lo	Proj_con	Cost	Fd_Srce	PIN_no	CID_no	Ref_no	Potential ATMS Deployments							
											Comm. Infrastructure	CCTV	VMS	TMS	ESS / RWIS	HAR	Signals	Ramp Meter
S	Statewide	Var	SP-	Traffic Signals Various Locations	Signal - New Construction	\$6,300,000.00	State Construction			354	x	x	x	x			x	
S	Statewide	Var	SP-	Sign Modifications & Replacement	Signing - Modifications & Replacement	\$400,000.00	State Construction			384			x					
S	Statewide	Var	SP-	Spot Improvements for Safety Various Locations	Spot Improvement - Various	\$2,600,000.00	State Construction			392	x	x	x	x	x	x	x	x
S	Statewide	Var	SP-	Program Development Contingency	Actions by Programming Director	\$200,000.00	State Construction			280	x	x	x	x	x	x	x	x
S	Statewide	Var	SP-	Various Locations Statewide	Bridge - Preservation	\$10,000,000.00	State Construction			338	x	x	x		x			
S	Statewide	Var	STP-	Various Locations Statewide	Road - Asphalt Pavement Preservation	\$3,880,000.00	Any Area - Statewide			314	x			x				
S	Statewide	Var	IM-	Various Locations Statewide	Road - Asphalt Pavement Preservation	\$6,200,000.00	Interstate Maintenance			285	x			x				
S	Statewide	Var	NH-	Various Locations Statewide	Road - Asphalt Pavement Preservation	\$14,900,000.00	National Highway System			313	x			x				
S	Statewide	Var	SP-	Various Locations Statewide	Road - Asphalt Pavement Preservation	\$25,000,000.00	State Construction			330	x			x				
S	Statewide	Var	SP-	Traffic Signals Various Locations	Signal - New Construction	\$6,300,000.00	State Construction			383	x	x	x	x			x	
S	Statewide	Var	SP-	Sign Modifications & Replacement	Signing - Modifications & Replacement	\$400,000.00	State Construction			281			x					
S	Statewide	Var	SP-	Spot Improvements for Safety Various Locations	Spot Improvement - Various	\$2,600,000.00	State Construction			393	x	x	x	x	x	x	x	x
S	Various	Var	SP-	Various Structure Recovery Projects	Bridge - Collision Repair Recovery Program	\$200,000.00	State Construction			410	x	x	x	x	x			
S	Various	Var	ITS-9999(320)	Various Locations Statewide	ITS/ATMS - Commuter Link Expansion	\$1,000,000.00	ITS			450	x	x	x	x	x	x	x	x
S	Various	Var	SP-	Traffic Management	Upgrade Intergrate Traffic Signals	\$1,000,000.00	State Construction			377	x	x	x	x			x	
S	Various	Var	SP-	Traffic Management	Upgrade Intergrate Traffic Signals	\$1,000,000.00	State Construction			378	x	x	x	x			x	
S	Various	Var	SP-	Traffic Management	Upgrade Intergrate Traffic Signals	\$1,000,000.00	State Construction			379	x	x	x	x			x	